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ABSTRACT

Contributed by librarians from public, academic, school, and special libraries, the 17 essays in this collection describe ways in which the Apple Macintosh is used in their libraries: (1) "Workstations and the Apple Macintosh" (Edward J. Valauskas); (2) "The Macintosh Experience at Chesapeake College" (Liz Cooper); (3) "ANSEL Character Set for the Macintosh" (Selden Deemer); (4) "The Macintosh Computer at the James M. Milne Library" (Richard D. Johnson); (5) "The Macintoshed Library--Clemson University Library" (Kenneth R. Murr); (6) "Macintosh Applications in the Media Services Department" (Layne E. Nordgren and Michael A. Sieber); (7) "Macintoshes in the University of Illinois at Chicago Library" (E. Paige Weston); (8) "Macintosh Computers, Developing a Local Area Network in the Public Library" (Duncan J. McKenzie); (9) "Nobody Here But Us Evangelists!" (Jean Armour Polly); (10) "The Macintoshing of a Public Library" (Bill Vaccaro); (11) "Using the Macintosh at Lincoln High School Library" (Anitra Gordon); (12) "Computerized Overdue Notices with Access to 512K Extended Macintosh" (Sally Tweedie); (13) "The Macs-imized High School Library" (Ruth Windmiller and Elizabeth Bankhead); (14) "Macintosh in the Apple Library" (Rosanne Macek); (15) "The Corporate Library Macintosh" (Kerry G. Stanley and Diane C. Shaffer); (16) "Macintosh Applications of the Merriam Center Library" (Edward J. Valauskas); and (17) "Examining the Future of Personal Computers and Libraries" (Edward Valauskas). (MES)

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Macintoshed Libraries

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Edited by

Edward J. Valauskas

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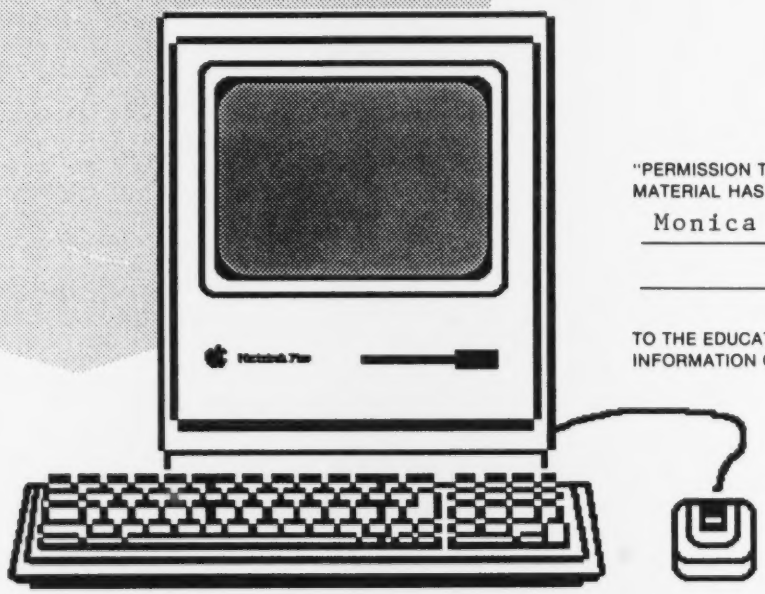

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MACINTOSHED LIBRARIES

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❦Editor❦

with the assistance of
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Cupertino, California

❦

1988

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Introduction: Workstations & the Apple Macintosh (1)

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Over the past year, the Apple Macintosh has been finding its way into libraries to handle many traditional computing chores, such as online searching and database management, and also some quite new activities, such as desktop publishing and hypertext applications. These machines are not being used in an isolated fashion, but instead are being used as an interactive tool to communicate with other Macintoshes, personal computers, minicomputers, and mainframes. In many ways the Macintosh is becoming a true library workstation, functioning as an intermediary for libraries to access large bibliographic files on the one hand, organizing local records and tracing the flow of materials through library operations on the other hand. The accounts in this book illuminate the Macintosh's role as a workstation in academic, public, school, and special libraries around the country.

How can we measure the success of the Macintosh as a library workstation? One way is to look at the path that libraries have followed in using computers. Computers first appeared in libraries in 1959, fourteen years after the birth of ENIAC (2). How did libraries cope with this then new technology? In 1962, a book entitled *Advanced Data Processing in an University Library* by Louis Schultheiss and others was published. It describes the way in which one library, The University of Illinois at Chicago, dealt with this new technology. The entire library staff was asked to rethink all of their day-to-day activities so that computers could create new techniques, allowing the Library to "provide established services more completely and rapidly than before," and "provide useful new services that could not previously be offered due to limitations of time and staff (3)." Rethinking is a good way of approaching new technology. Certainly in 1962, this marriage of new technology and new thinking was a revolutionary idea, especially that of reviewing those sacred cows of library procedure in terms of a machine.

Given the state of computer technology at that point in time, thinking was certainly a requirement. Schultheiss mentions several computers available to libraries at the time—the IBM Model 1401, the Honeywell 400, the NCR 315 (4). The IBM 1401, one of the most popular computers of its time, featured a maximum memory capacity of 16 kilobytes, and sold for about $280,000 (5).

Despite all of the advances in computers over the last 35 years, the basic conclusions of Schultheiss are still valid in these days of desktop megabytes. The responsibility for re-thinking our roles and our tasks in terms of new tools falls on our collective shoulders. To quote from Schultheiss, "It is important that the librarian be the one to translate these new techniques into the language of the library and that this job be not left in the hands of computer personnel. It is easier to train a librarian in the techniques of programming than it is to make a librarian out of a physicist or mathematician trained in computer and machine technology. Being a librarian implies a state of mind as well as special training (6)." So at least one step in becoming a technologically fluent librarian requires an open mind, and an ability to imagine new ways of doing old tasks.

If we move forward in time ten or twelve years, we would notice that librarians were beginning to recognize the potential impact of the minicomputer on library operations. Minicomputers created by Digital Equipment Corporation were first introduced commercially in 1964. They offered, at a greatly reduced price over mainframes, the chance for many institutions to own a computer of their very own (7). Walter Curley remarked, at the 1974 Clinic on Library Applications of Data Processing at the Graduate School of Library Science at the University of Illinois at Urbana-Champaign, that minis would allow libraries to move out of their paper files, without dramatically increasing their operational costs (8).

By our standards, the minicomputer technology of the mid 1970s seems puny and archaic in comparison with personal computers. DEC's Model PDP 11/34 minicomputer in 1976 featured a maximum memory on its boards of 256 kilobytes. It could handle a number of disk drives, each drive requiring a large disk with a maximum capacity of 2.5 megabytes. A terminal, a printer, and modem could also be added. Six or seven thick manuals were all part of the documentation, along with a number of supplements. All of this hardware, software, and printed matter could easily fill a small room, and could cost between twenty to thirty thousand dollars. Technology has advanced to the point where all of this hardware might be spotted these days on a loading dock awaiting a trashman. My library staff rescued a PDP 11/34 from such a fate, complete with central processing unit, five disk drives (of which only two work), 31 disks for the drives, a printer, a terminal, a punch card reader, and boxes of manuals. The organization that was disposing of this mini in such an unglamorous fashion was moving to a new office in the suburbs, and didn't want to endure the expense of moving a computer it didn't use. So our Second Lesson as technolibrarians is that we cannot expect to buy into a given technological solution and expect it to last forever. We need to invest into a technology that anticipates the future, that will grow as we grow. With these bromides firmly planted—the bromides being To Think, and To Keep Up With the Times—we can move on to the idea of a library workstation.

Imagining Library Workstations

One way then of conjuring a library workstation is to envision it as a device that will make all of our current ideas about computers obsolete, ready for the cleaning crew or for the computer scavengers to haul away. This tool would serve a whole range of vocal and demanding end users, from Nobel laureates to kindergartners, from professional administrators to beginning clerical workers.

Should we place some physical boundaries on our imaginations regarding these devices? Probably not. Larry Tesler, Apple's vice president for advanced technology, has remarked that performance increases by a factor of three or four every two years (9). A Macintosh workstation of the near future with two gigabytes of RAM and execution speeds of hundreds of millions of instructions per second, accessing mainframes with storage measured in terabytes, may not seem so farfetched (10).

Examining Workstations

How should we define a library workstation? This term refers to a whole range of computers from a dumb terminal hooked to a remote mainframe to a number of popular personal computers. We need to look at workstations, in general, in order to get a better handle on the definition of a library workstation. Some of the confusion over definitions has been caused by hardware advances over the past year which have blurred the distinctions between personal computers and formal workstations. In other cases, some manufacturers have been quick to call their new machines workstations when they weren't, simply to attract attention and orders. Workstations also mean something entirely different to librarians and to computer manufacturers. We need to sort out all of these differences, so that we're all on the same wavelength.

In the trade literature of the computer industry, workstations are usually defined as multitasking computers, operating with relatively powerful microprocessors, combined with massive storage, large high-resolution monitors, networking capacities, and specialized software (11). Workstations commonly use a Unix operating system and network with Ethernet, allowing transparent file transfer. Their large monitors permit detailed graphics, and software allowing windowing applications; internally, they have 2 to 4 megabytes of RAM, and hard disks with capacities of 70 megabytes or more (12).

Personal computers on the other hand have traditionally been called stand-alone devices, able to accomplish only one task at a time. In comparison to workstations, these devices have traditionally been less powerful, featuring only a megabyte or less of

units (13). The hallmark of personal computers has been their ease of use and the availability of wide variety of software created for use with standardized operating systems. These features have made personal computers the computing choice for the desktop, with a little over nine million sold just in 1987; less than 300,000 formal workstations have been sold (14).

So if we draw up a table, and date it sometime before 1987, we can compare the differences between traditional workstations and personal computers.

Workstations & Personal Computers: A Hardware Comparison, pre-1987

	Workstations[15,16,17]	Personal Computers[15,17,18]
RAM	2-4 MB[15]	<1 MB
storage	>70 MB[15,16]	<40 MB
execution speeds	>1 MIPS[16]	<1 MIPS
operating system	Unix[15,16]	DOS; proprietary
networking capability	Ethernet[15,16]	not available; AppleTalk
networking speeds megabits/sec[17]	variable	10-12 [17]
display resolution	1024 x 800 pixels[16]	480 x 640 pixels[18]
cost per unit	>$10,000	<$5,000
distinctive characteristics	interconnectivity; true multitasking	ease of use; availability of many programs

Up to 1987, workstations clearly had an edge over personal computers in speed, storage, and capacity for complex work. But all of these features carried an expensive price tag. Workstations blaze a hardware trail, testing new breakthroughs, pointing the way for personal computer manufacturers (19); these pioneer efforts are not cheap, so the costs are passed on to the customer. Nevertheless, all of this high performance is very attractive to PC owners. It has been often stated that personal computer owners tend to fill up their hard disks, slots, and ports as quickly as nature fills a vacuum. Manufacturers such as Apple and IBM have recognized these primeval hardware instincts on the part of their customers, and have announced over the past year new models which appear to have many of the characteristics of traditional workstations. Workstation manufacturers, in turn, have responded as well by cutting the prices of some of their basic models to the levels of these new computers. In the course of the past year, thanks to this market pressure, we have seen the arrival of a new device —the personal workstation— a hybrid featuring 4 or 6 megabytes of RAM, with Unix capabilities, networking features such as Ethernet, high resolution monitors with amazing color capacities, and hard disk storage from 60 megabytes on up. These new

computers remain easy to use, take advantage of a great deal of off-the-shelf software, and communicate with a whole range of computers from DOS-based PCs to Cray supercomputers.

Let us examine some of these new computers and compare them to workstations from Apollo, DEC, and Sun.

Workstations, Personal Workstations, PCs: A Comparison[20,21,22]

	MIPS	RAM (MB)	Storage (MB)	Operating system	Network	Network speeds (mbits/sec)	Cost
Workstations							
Apollo DN 3000	1.5	9	348	Domainix, Aegis	Ethernet	10-12	4,990
Apollo DN 4000	4	9	348	Domainix, Aegis	Ethernet	10-12	13,990
DEC Vax-station 2000	1	6	318	VMS, Ultrix	Ethernet	10-12	4,600
DEC Vax-station 2-6PX	1	16	477	VMS, Ultrix	Ethernet	10-12	19,900
Sun: 3/50	1.5	4	282	Unix	NA	-	4,995
Sun:3/60	3	24	282	Unix	NA	-	7,900
Personal Workstations							
Mac II	1-2	8	80	Mac, Unix	AppleTalk, Ethernet	0.23-12	4,297 10,745
IBM PS/2 Model 80	2-3	16	>80	PC-DOS, OS/2	PC Network, Token Ring	4	6,995-13,995
Personal Computers							
Mac SE	1	4	>20	Macintosh	AppleTalk	0.23	2,898

It would appear that the distinctions between workstations and personal computers have disappeared, with more power and speed available at less cost. Upon closer examination, this argument falls apart, largely because traditional workstations and personal workstations have their roots in two totally different hardware cultures, literally one for the masses, the other for the specialist. Let's look at comparably equipped and priced workstations-- the Macintosh II, Sun Microsystems' Model 3/60G, and Apollo Computer's DN/3000.

Comparison of Workstations[23]

	Macintosh II	Sun 3/60G	Apollo DN/3000
CPU	16-MHz 68020/ 68881	20-MHz 68020/ 68881	12-MHz 68000/ 68881
Memory Management	Motorola 68851 MMU optional	Sun custom MMU	Apollo custom MMU
RAM	1 MB std.	4 MB std.	4 MB std.
RAM expansion	up to 8 MB on system bd., 80 MB on NuBus cards	up to 24 MB	up to 8 MB
expansion slots	6 NuBus expansion slots	None	PC AT expansion slots
network capabilities	AppleTalk std., Ethernet optional	Ethernet std.	Apollo ring std., Ethernet opt.
hard disk storage	80 MB internal SCSI	71-282 MB external SCSI	72 MB internal SCSI optional
floppy disk	internal 800K 3.5" floppy	None	internal 1.2 MB; 5.25" optional
cost	$12,639	$15,350	$14,500

Comparison of Features of Mac II, Sun 3/60G, & Apollo DN/3000[24,25]

Features in common:	Motorola 68020, 688881 floating-point coprocessor, SCSI ports, Ethernet interface
Features not in common:	different memory management units; AppleTalk interface; NuBus slots
Advantages of Mac:	RAM expandability; six NuBus expansion slots, easy installation of hardware & software; operating system less memory intensive ; Mac user interface faster than SunTools; Mac has larger,cheaper software base.
Disadvantages of Mac:	Sun UNIX virtual memory allows programs to address more memory than installed on board; Sun UNIX more sophisticated than MultiFinder
Applications strengths in favor of Mac:	business (accounting, spreadsheets), word processing, graphics, desktop publishing
Applications weaknesses against Mac:	computer-aided design/engineering/manufacturing, design simulation

At first glance, all of the hardware seems pretty similar —lots of RAM, fast processors, quick networking options. In detail, the Macintosh's advantages stand out — expansion slots, RAM expandability, easy installation of software and hardware, a kind user interface with a less memory-intensive operating system, and an abundant and inexpensive software base. So unless a library plans to build a bridge, design an airplane, or create robots to handle book shelving, the more specialized workstations would probably not be be a good choice. The costs of some of these more specialized workstations have driven several engineering groups to integrate Macintoshes into their operations to work in tandem with formal workstations to reduce their overall costs for hardware. These engineering concerns include the Martin Marietta facility at Denver, working with 300 Macs and a number of Apollos on designs for a space station, and facilities in the Engineering Colleges at the Universities of Iowa and Michigan (26).

How does the Macintosh stack up against the IBM Personal System/2 Model 80? Criticism from the trade literature indicates that the Macintosh has some decided advantages in this new workstation market. Despite the strong sales of some models in IBM's new series of personal computers, there are few applications that yet take advantage of the new operating system, OS/2 (27). Versions of Presentation Manager, the IBM simulation of the Macintosh graphical user interface, will not ship until late in 1988. Users who have seen versions of Presentation Manager have complained that the "icons were not very Mac-like (28)." There have been a number of problems in getting the new operating system to run on IBM's own PCs equipped with third party parts. Operating System/2 standard edition 1.0 requires 1.5 megabytes of memory just to start up, 2 megabytes to run along with MS-DOS applications, and at least 5 megabytes of hard disk space for files (29). Other features of the new system such as multitasking are already available in other forms such as Microsoft's Windows and Apple's MultiFinder (30). Clearly, the troubles with IBM's new hardware and software have given the Macintosh an opportunity to capture part of IBM's market, taking advantage of the ongoing convergence of prices and performance of traditional workstations and personal computers (31). Now that we have looked at some of the hardware arguments for the Macintosh as a workstation, let's look at some of the evidence for the success of the Macintosh in the workplace.

Macintosh in the Workplace

What kind of evidence supports the Macintosh as a workstation in the office environment? There have been a number of independent studies conducted over the past year to test the Macintosh's strength in the workplace.

In business, the Macintosh is used primarily for graphics, financial analysis, word processing, and database management; these four areas account for nearly sixty percent of all reported uses. What advantages are gained by the Macintosh in the workplace? Over eighty percent of the published remarks repeatedly cite four gains with the Macintosh: its ease of use; its simple connectivity to other Macintoshes with the installed AppleTalk interface, and to other types of computers; its positive influence on productivity of employees; and its lower training costs. All four of these factors interrelate, and are based on the fundamental hardware and software features of the Mac.

Training: A survey of 401 randomly selected corporations was made last November, examining departments where both IBM PCs and Macs were in use. When personnel were asked which computers required more training, 94 percent said IBM, 3 percent said Macintosh, and 3 percent didn't know (32).

Connectivity: In the previously mentioned survey, 42 percent of all departments with both PCs and Macs connect all of their computers in some fashion. In smaller companies with under 100 employees, 51 percent of the Macs communicate with PCs. In larger businesses with over 1,000 employees, 41 percent of the Macs share files with the PCs. What do the Macs do with the PCs? Seventy-two percent of those surveyed transfer text files; 58 percent allow their Macs to access PC hard disks, with only 12 percent actually using MS-DOS on Macs (33). How many computers are in these clusters? In a

survey completed in April and May last year of some 600 companies, 51 percent of these networks consist of 2 to 10 computers. Nearly three quarters (actually 73 percent) of all networks contain 20 or less computers (34). Small work groups, even in large corporations with thousands of computers, seem to be the norm. The expenses of personal computer connectivity vary with personal computer models—file sharing for 50 IBM PC users costs at least $2,100; AppleShare is available at $800 for 50 Mac users, provided a dedicated Mac unit and hard disk are also available (35). These costs play a part in the types of computers to which Macs are connected. In a survey of 28 Fortune 1,000 firms by Forrester Research, Inc. last November, 76 percent of all surveyed claimed that Macs were connected to other Macs, 42 percent pointed out that they were also hooked to IBM mainframes, and 21 percent noted that they were plugged into DEC Vaxs (36).

Reliability: The most detailed, comparative reliability study was made by Bill Sholar, assistant director of academic computing at Carnegie-Mellon University. This analysis examined the repair rates for the campus' 1,500 Apple Macintoshes and IBM PCs. In any given year, Sholar found that all 700 of the University's IBM PCs would come in for repairs, with most malfunctions blamed on disk drives. The Macintosh repair rate was less than half of the IBM rate; 47 percent of the Carnegie-Mellon population of Macs will come in for work, most often for logic board problems. Those Macintoshes that required the most attention were those in public places; Macintoshes owned by individuals required much less attention (37).

Productivity: A study by Peat Marwick Main and Co. last year examined the benefits of the Macintosh in the corporate world. The results, released last summer, noted the following:

-increases in productivity were claimed by a whole range of workers, from vice presidents to clerks using the Mac,

-the ease of use promotes higher use, on the average three times as much per day as the IBM PC,

- increases in the quality of work were also reported at all levels.

In individual case studies, Peat Marwick Main found dramatic increases in productivity by an aerospace project team, reducing usual demands for mainframe time and staff. This team cut turnaround time for documentation on proposals from 5 days to 1.5 hours. In another case study, researchers in a product development group reduced the amount of time for experimentation from 10 days to just 48 hours. All of these productivity gains mean extra time on the job for other activities, and that raises the only problem discovered by the study. David Shay, manager of the study, commented that all of this free time is squandered because many employees are not sufficiently creative or motivated to find new work. And another participant in the study noted yet another problem. In all of his twenty five years of introducing new technology into a company, he had never seen such a positive reaction to equipment in the workplace. He said, and I quote, "If you took away these people's machines [i.e. their Macintoshes], they would kill you (38)."

The bottom line from all of these studies, polls, and surveys seems to be that the Macintosh, more than any device in recent memory, is helping business function more efficiently and productively, minimizing the operational pains that once accompanied the introduction of new technology. As Paul Strassmann formerly vice president of strategic planning at Xerox, stated, productivity in the corporate world is a function of the way in which knowledge is communicated (39). Technology can assist managers in sustaining the organization, in "keeping a business organized (40)." The Macintosh appears to be the ideal anti-entropy appliance.

Defining a Library Workstation

Now that we've examined the evidence supporting the success of the Macintosh as a corporate workstation, can we carry these arguments a little farther and claim the Macintosh as a library workstation? It would help if we could come up with a working definition for a library workstation. Simply put, a library workstation would be a com-

puter that could handle the information needs of the entire range of library users, from a patron at the reference desk to the library director (41). All sort of clients could use it as a public terminal, searching for a periodical title or a call number for a book. Other patrons could find it as a means to access an online database or the library's electronic bulletin board. Still others could use it as a vehicle to send a question to the reference staff, or an interlibrary loan request to circulation. From the public standpoint, the library workstation could be viewed as gateway, a tool to access the rich resources in a library.

To a staff member, a library workstation takes on an entirely different meaning. Traditionally, these devices have been tools to access and manipulate bibliographic data stored on large files in mainframes. For the reference staff, that means a tool to reach files stored on DIALOG or LEXIS. For the catalogers, it means a terminal to reach the 17 million records on OCLC's mainframes. For personnel in circulation or acquisitions, a workstation means a CRT to examine and update overdue materials or orders not received. In an administrative office, it may simply refer to a Wang to generate all of the documentation necessary for a budget or a letter to soothe an angry board member. Rarely do library workstations refer to an integrated network of computers serving both patrons and staff reading, correcting, and overhauling similar files in real time. Equally, these computers are usually thought of as stand-alone units, devoted to a single task usually dependent on the computing strength of a remote mainframe. Different operating systems, and different applications occur in different locations so file transfer and physical interconnectivity are not likely. Ideally a library workstation would be a tool available to all end users, interconnected and accessible in all locations, with sufficient local memory and computing speed to handle routine day-to-day activities on site in real time, yet with the capability of reaching, accessing, manipulating, and downloading mainframe files.

How does the Macintosh rate as a library workstation by such platonic standards? The Macintosh is being used as a tool to handle a variety of routines in the library world, as the articles in this book demonstrate. Large academic libraries use the Macintosh in a number of different settings to provide services to patrons, to manipulate data stored on mainframes, and to access electronic mail on academic networks. Public libraries position the Macintosh as a public terminal, to guide the patron through floor plans with HyperCard stacks, such as at the Sulzer Regional Library, a branch of the Chicago Public Library. School and special libraries increasingly are becoming the sites of active experimentation in using Macintoshes for all sorts of needs. This book provides case studies illustrating the use of the Macintosh as a library workstation. Workstations will grow in importance in libraries, with the growing availability of large bibliographic files in the CD-ROM format and the dropping cost of sophisticated hardware and software. These computers will provide a cohesive way of sharing information, hardware, and software in the workplace. Coupled with their ease of use and flexibility, the Macintosh will be used increasingly in library operations. Personnel in libraries using the Macintosh have demonstrated that they can perform at some startling levels, provided they're given an opportunity to explore and experiment. Workstations may give libraries the ultimate chance to discover the wealth of hidden resources within their doors, in that of their employees. In the long run, Macintoshes will transform libraries from mere depositories of books and periodicals, passive repositories of data, into active and valued resources, plugging libraries into a highly intricate and rapidly evolving national informational network.❦

Notes

1. Portions of this paper were presented at the Small Computers in Libraries Conference in Chicago on March 7, 1988 and at a presentation at the Library of the University of Illinois at Chicago on April 8, 1988.

2. Educational Facilities Laboratories, Inc., *The Impact of Technology on the Library Building*. New York, [1968], p. 9; Paul Ceruzzi, "An Unforeseen Revolution: Computers and Expectations, 1935-1985," In: Joseph J. Corn (ed.), *Imagining Tomorrow: History, Technology, and the American Future*. Cambridge, Mass., MIT Press, 1986, p. 188.

3. Louis A. Schultheiss, Don S. Culbertson, and Edward M. Heiliger, *Advanced Data Processing in the University Library*. New York: Scarecrow Press, 1962, p..15.

4. *Op. cit.*, pp.113, 119-120.

5. *Op. cit.*, p. 113. It was the third IBM computer to use transistors, and some 12, 484 units of the Model 1401 were sold. It has been discontinued for 21 years. See Stanley Gibson, "The 16K of memory is fine, but the price of punch cards is going through the roof," *Computerworld* v. 21, no. 50 (Dec. 14, 1987), 1.

6. Schultheiss *et al.*, p. 113.

7. J. L. Divilbiss, "A Hardware tutorial," In: F. Wilfrid Lancaster (ed.), *Applications of Minicomputers to Library and Related Problems: Proceedings of the 1974 Clinic on Library Applications of Data Processing* Urbana, Ill.: Graduate School of Library Science, University of Illinois at Urbana-Champaign, 1974, pp. 3-5.

8. Walter W. Curley, "The Minicomputer and the computer gap for libraries," In: F. Wilfrid Lancaster (ed.), *op. cit.*, pp. 28-31.

9.Jerry Borrell and Larry Tesler, "Verbatim," *Macworld* v.4, no. 6 (June 1987), 75+.

10. Seymour Cray, quoted in John Sculley, *Odyssey*. New York: Harper & Row, 1987, p. 411. Nevertheless, these hardware possibilities ignore some of the real problems in putting a Cray on a desktop, and assume that there will be few advances in supercomputer architecture in the next decade. In 1986, the Macintosh Plus was achieving execution speeds of around 600,000 calculations per second, in comparison to the Cray X-MP speeds of 800 million calculations per second; see Daniel Farber, "Macworld news- Apple supercomputer," *Macworld* v.3, no. 11 Nov. 1987), 81+. As Larry Tesler noted, the Cray and Macintosh are dissimilar computers; the Cray can accept huge amounts of data with a throughput of 100MB per second; the Macintosh II has a physical limit of 40 megabytes per second, but is actually much less given its current I/O set-up. See Borrell and Tesler, *op.cit.*, 82,88.

11. Edward J. Valauskas, "The Macintosh and the concept of a library workstation," *Apple Library Users Group Newsletter* v. 5, no. 3 (July 1987), 52; Charles Rubin, "Workstations the personal computer alternative," *Personal Computing* v. 12, no. 2 (Feb. 1988), 126.

12. Rubin, *op. cit.*

13. Valauskas, 52-53; Rubin, 126.

14. Anon., "How many PCs, and what will they cost?," *Computerworld* v. 21/22, nos. 52/1 (Dec. 28, 1987/Jan.4, 1988), 52; Rubin, 132.

15. Rubin, *op.cit.*, 125-126.

16. Charles D. Weston and George A. Stewart, "Workstations," *Byte* v. 12, no. 2 (Feb. 1987), 85+.

17. Robert M. Metcalfe, "Networking predictions on Ethernet's fifteenth birthday," *Connect* v. 1, no. 2 (Winter 1988), 20-22.

18. Alan Paller, "Clash provokes burst of change," *Computerworld* v. 21, no. 30 (July 27, 1987), S1+.

19. Bill Joy, "Workstations blaze the trail for PCs," *Personal Computing* v. 16, no. 10 (Oct. 1987), 234.

20. Paller, *op.cit.*, S2-S3.

21. Anon., "Hardware roundup: personal computers," *Computerworld* v. 21, no. 40 (Oct. 5, 1987), S11.

22. Anon., "Hardware roundup: workstations," *Computerworld* v. 21, no. 40 (Oct. 5, 1987), S16.

23. Andrew G. Shebanow, "Workstation choices: Mac II vs. Sun 3/60," *Macworld* v. 5, no. 2 (Feb. 1988), 166,169.

24. Shebanow, *op. cit.*, 165-169.

25. Harold Borkin, "Workstation choices: Mac II vs. Apollo DN/3000," *Macworld* v. 5, no. 2 (Feb. 1988), 170-174.

26. Rick Cook, "Bidding for the Space Station," *Macintosh Buyer's Guide* (Fall 1987), 46; Anon., "Apollo Workstation," *Macworld* v. 5, no. 2 (July 1986), 67.

27. Douglas Barney, "Uh, well...OS/2 ports still empty," *Computerworld* v. 22, no. 7 (Feb. 15, 1988), 1+.

28. Anon., "Inside lines," *Computerworld* v. 22, no. 7 (Feb. 15, 1988), 134.

29. William Zachmann, "Much ado about OS/2," *Computerworld* v. 22, no. 6 (Feb. 8, 1988), 33+.

30. William Zachmann, "OS/2: The plot weakens," *Computerworld* v. 22, no. 7 (Feb. 15, 1988), 39+.

31. Anon., "Are personal computers workstations?," *MacWeek* (*WorkstationWeek* supplement) v. 1, no. 20 (Sept. 22, 1987), 6.

32. Griffin Dix, "Yes, Virginia, there is a Mac training market," *MacWeek* v. 2, no. 5 (Feb. 2, 1988), 20.

33. Griffin Dix, "Booming market in Mac-PC connectivity," *MacWeek* v. 2, no. 7 (Feb. 16, 1988), 21.

34. Bill Langenes, "Focus: Local-area networking," *MacWeek* v. 1, no. 5 (June 8, 1987), 22.

35. Dix, *MacWeek* (Feb. 16, 1988), 21.

36. Anon., "A growing attachment [table]," *Computerworld* v. 21, no. 44A (Nov. 4, 1987), 32.

37. Mary Powers, "Macintoshes showing reliability: repair rate low at Carnegie," *MacWeek* v. 1, no. 6 (June 15, 1987), 8.

38. Steve Mann, "Study shows Macs enhance office productivity," *Macintosh Today* v. 1, no. 3 (Sept. 28, 1987), 1+.

39. Paul Strassmann, "A direct connection to productivity," *Computerworld* v. 22, no. 1A (Jan. 6, 1988), 18.

40. Strassmann, *op.cit.*, 22.

41. See also Edward J. Valauskas, "The Macintosh and the concept of a library workstation," *Apple Library Users Group Newsletter* v. 5, no. 3 (July, 1987), 52-53.1986), 70-73.

Academic Libraries

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The Macintosh Experience at Chesapeake College

by Liz Cooper
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Chesapeake College is a small community college serving five counties on Maryland's Eastern Shore. The Learning Resource Center has a book and materials collection of approximately 40,000 volumes and a staff of seven people. Our staff consists of an administrator, a librarian, a media services coordinator, a technical services specialist, a telecommunications paraprofessional, and two part-time circulation clerks. Hence, as is the case in any library, we are constantly juggling the demands of our students and an ever increasing paper load.

Computers have helped make us more efficient, allowing us to use our staff to their best abilities. We started out in [illegible] with five Apple computers, used mostly for word processing and online searching, then upgraded to the Apple IIe. In 1987 we added a hard drive to an Apple IIe at the circulation desk and put our circulation system online with Circulation Plus. We also use the Apple IIe for creating catalog cards with the program *Quik Card*.

Claudia Jewell, our media services coordinator, acquired a Macintosh Plus in 1986. One project that immediately became easier, as well as faster, is our production of a union list of periodicals. We coordinate this list with the Eastern Shore Regional Library, the regional office of the state public library system. The list has the periodical holdings for the nine county public libraries in the area, the Regional Library, Cecil Community College, and Chesapeake College. Libraries send their lists to us, we update their holdings, and the Regional Library reproduces the list.

Last year we redid the list using Microsoft *Works* on the Mac. *Works* is an integrated database, spreadsheet, and word processing program. That is, data collected in the database can be used in word processing documents as well as a spreadsheet. We were able to generate individual library holdings records as well as compile the master list from the same data. *Works* on our Mac proved to be extremely fast at sorting records. Since it is so easy to use, we've had our student assistants help with data entry.

We acquired a second Macintosh Plus for the Library in the fall of 1987. I must admit to being slow to use the Mac—after all, I had access to word processing programs on the Apple IIe. However, I had to compile a mailing list of academic libraries in Maryland and include those librarians who were also members of the Maryland Academic Interlibrary Loan Librarians' group. The former secretary of the organization had given me a copy of the old mailing list on a data disk. However, her data disk was for use on an IBM and it had been done on *dBase III*. I didn't have practical access to an IBM, and somehow, the thought of learning *dBase* only to update a mailing list seemed very grim. Claudia suggested using *Works* instead for this project.

It is relatively easy to set up a data file in *Works*, even for the first time. I analyzed what characteristics of a mailing list would translate into fields. For example, I broke down each component of an address into a separate field, which would allow me greater sorting ability. I created a database which allows me to print only those people who are members of the group, or those people who need to have materials mailed, or those who receive materials via the state's library courier system. *Works* also allows one to update, change, and add new fields to the data files easily. I used its word processing component to format labels, which I then printed on an ImageWriter.

At about the same time that I was becoming a Mac convert, our library adminitrator, Kay Brodie, was editing a new book for the Chesapeake Press. She had a typist working on the author's manuscript on a Macintosh. The typist would print out her progress, and Kay and others would proofread it and make changes. When the book

was finally ready to be sent to the printer, Kay and Claudia hooked up our Mac to a Hayes Smart Modem. Using *Red Ryder*, a telecommunications program, they transmitted the entire book over the telephone to the printer's office computer.

The next step was to create a flyer to advertise the book. We've found that we have been able to create attractive and professional-looking flyers in-house using the Mac. This flyer was then printed by the college's graphics department and mailed to prospective buyers. The mailing labels had been created on*Works*, allowing us to combine several mailing lists. Most of that data entry was done by a student working for the library.

By this time it was clear that several of us were very comfortable using the Macintosh. One Mac stays in Claudia's office, and the second Mac is mobile. We acquired a rolling cart, a Peanut, which holds the Mac and an ImageWriter II. The cart has shelves which slide out; one creates a table for the key board and the other gives access to the printer. Usually the cart is near the circulation desk, but it can be easily wheeled to an office. We find that this is very convenient when we have an extra person to do data entry, since he/she can be moved away from the library's center of activity.

We have found additional uses for our Macs. We have been able to redesign library use flyers using *MacWrite* and Microsoft *Word*. Program flyers for coming events are often created on the Mac. It is very easy to design a flyer and alter the size and style of the typefaces with software for the Mac. For example, one of the advantages of *Word* is its page preview function. You can't always tell what something is going to look like with a small screen, and this allows you to see the entire page layout at once. We have access to a LaserWriter which gives us a final product that we would never have been able to produce in-house without a graphic artist.

Claudia uses the Macintosh with the College's speech classes. Each student is expected to present one speech using a visual aid, often a transparency. Claudia meets with the classes and describes the elements of a good transparency. Students then can come to the library for help designing one with the Macintosh. Again, the ability to quickly alter the size and style of the fonts is important. Plus, the Mac's ClickArt and drawing options offer many additional choices for a visual presentation.

This year we intend to compile our Annual Report on the Mac, using *Works*. We plan to put our data into the database and spread sheet programs to create charts and graphs. Having the data in one place makes it easy to go back and forth between different files and update items as needed.

I plan to use *Works* to update several library indexes. We keep a fairly comprehensive collection of pamphlets and articles in our vertical file and the index often needs to be updated. In the past we have used word processing programs and alphabetized the list before typing it. This time I plan to update the list using *Works*. The list can then be sorted and resorted as needed. I suspect that future subject bibliographies of our holdings will be done on *Works* as well.

The Audio-Visual Department will benefit from some of the most exciting changes in Mac capabilities. Claudia has been working with presentation software and hopes to have a Mac II with a color monitor in the next year. She would like to use *PowerPoint* and *Cricket Presents* to create color slides for presentations, or at the very least, color overlays for transparencies. A Mac II would also allow her to set up computer generated video presentations. The college already has a remote video projection unit which would be compatible with the signal from the Mac. Claudia is also working on possible uses for *HyperCard*, since she hopes to have the necessary hardware soon.

We will be using CD-ROM in our library next year, but we will be searching with an IBM. This decision was made when the hardware and software simply were not available for the Macintosh. As CD-ROM expands, we hope to see more choices for the Mac as well. The Mac has proven to be a very accessible tool for the students who work for us; it seems likely that future CD-ROM packages would allow us to extend that accessibility to other students.

We have found the Macintosh to be a welcome addition to our library. New applications appear as we work on new projects. I suspect that *HyperCard* and other advances will lend themselves to uses we have only begun to imagine. ❦

ANSEL Character Set For The Macintosh

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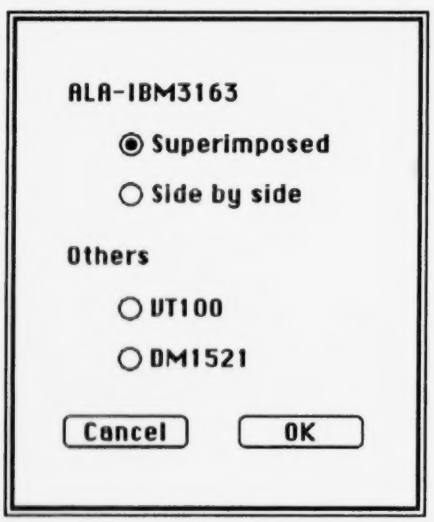
Research libraries typically acquire materials written in many languages. Providing effective bibliographic control of these materials requires using an extended character set to represent special characters and diacritical marks found in languages other than English. This is often referred to as the extended ALA character set, or more specifically the American National Standard Extended Latin (ANSEL) character set.

Libraries that use the OCLC or RLIN bibliographic utilities are accustomed to having support for this character set through dedicated terminals or terminal emulation software for MS-DOS personal computers, such as the OCLC M-300. Until recently, libraries that maintained their own local catalogs on an IBM mainframe system and wished to support the extended character set, generally used a Telex terminal, model 476L. Telex recently discontinued this terminal.

In 1986, IBM introduced the 316X line of relatively inexpensive ASCII terminals, for which ANSEL character set support was offered as an option, via a ROM cartridge and special keyboard. With the withdrawal of Telex from the library market, IBM's 316X terminals became the only choice for libraries that wish to provide extended character set support in an IBM-mainframe environment, using standard equipment. Emory University uses 71 of these terminals for online catalog access to its DOBIS/Leuven integrated library system, as well as at many staff work areas. However, these are so-called "dumb" terminals; they can only be used with a mainframe computer, and have no local storage capability.

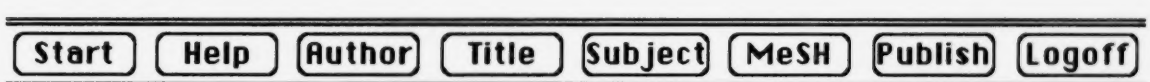
In 1988, Yale University added 316X emulation to *TinCan*, a communications program for the Macintosh. *TinCan*, release 3, supports the extended library character set, making it possible for Macintosh users to search for, display, and if authorized, edit bibliographic records containing these special characters and diacritical marks. *TinCan* offers several different emulation modes:



VT100 emulates DEC terminals, and is supported by most communications programs. DM1521 emulates a DataMedia 1521 terminal. The ALA-IBM3163 emulation offers two choices, affecting the way diacritical marks are displayed. In most library systems each diacritical mark is stored as a separate character that precedes the character with which it is associated. "Superimposed" displays each diacritical mark above or below the character with which it is associated; e.g. ñ. The "Side by side" option displays diacriticals as they are entered; e.g. ~n. A superimposed display is more readable, while the side by side option is generally more useful for data entry and editing.

```
Online catalog
Titles
Full information    Document    30792577

Title:      Þættir um líf og ljóð : norrœnna manna í fornöld.  Guðni
            Jónsson prófessor og Árne Björnsson lektor sneru á islenzku
Author(s): Olsen, Magnus Bernhard, 1878-
Publisher: Hið íslenzka bókmenntafélag, Reykjavík, 1963

Subjects:   Icelandic and Old Norse literature. / Epic poetry History and
            criticism. / Literature, Medieval.
Note:       Includes bibliographical references.

Contains:   298 p. ; 23 cm.

Copies:     Location  Call number                  Status          Due
General     wg        PT7146 .05                   Not on loan


Type code (see below), then RETURN

t new term              c copies
i new index
w show indx                                                 v save
```

The previous screen shows an Icelandic record that displays both extended characters such as the œ digraph, as well as superimposed diacritical marks. *TinCan* works best with the extended ADB keyboard, which is an option for the Macintosh SE and Macintosh II. On this keyboard, all diacritics are accessible from the numeric keypad, and extended characters are assigned to the same positions as on the 3163 keyboard. Although TinCan supports the ANSEL character set on all Macintosh keyboards, some awkward gymnastics are required to generate diacritical marks on the original Macintosh keyboard. In addition, *TinCan* provides a key mapping editor, so that the effect of any key can be re-defined. TinCan is one of the first programs to support all twelve function keys on the extended ADB keyboard. *TinCan* also provides eight on-screen buttons that can be edited as needed. For example, on a Macintosh used as an OPAC terminal, on-screen buttons could be defined to send specific search commands, and labeled as shown below:



Finally, *TinCan* provides three different options for printing:

• Bit-mapped screen print. This prints all displayable characters and diacritical marks, as they appear on the screen.

• Fast screen print. This prints only "standard" characters, but is much faster than a bit-mapped print.

• Print to disk file. This saves the standard characters from the current screen to a disk file. Since the ANSEL character set is not supported by standard Macintosh software, the special characters and diacritical marks are again lost.

Where the added functionality of a microcomputer workstation is required, a Macintosh using *TinCan* offers an attractive alternative, via emulation, to using an IBM 3163 library terminal. *TinCan* is available from Yale University.

For more information, contact:

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The Macintosh Computer at the James M. Milne Library

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The James M. Milne Library at the State University College, Oneonta, New York, employs a mix of computers to aid its operations. Happily, the Macintosh computer has joined the group.

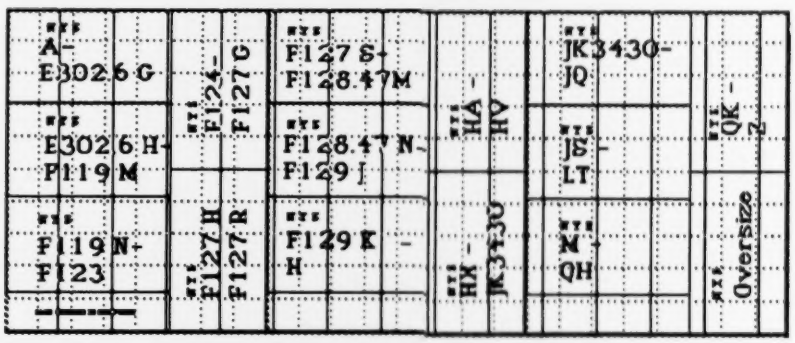
A brief background on the college and its library: The State University College at Oneonta is one of 13 colleges of arts and science in the State University of New York (SUNY). Located in New York's southern tier, the college enrolls about 5,500 students and offers a broad undergraduate curriculum and some graduate programs. The Milne Library has a book collection of 485,000 volumes and subscribes to 3,300 current serial titles. The full-time staff totals 38.

The library has been an OCLC member since 1974 (online cataloging, interlibrary loan, and SC350 for serials control) and is working with other SUNY college libraries in introducing an integrated automated system. During the early months of 1988 staff barcoded the collection as one step in getting ready.

To aid its behind-the-scenes operations, the library acquired in 1984 a multi-user Altos computer. During the following years the system has been upgraded so that it is now the equivalent of a model 2086/386. The Altos computer supports thirteen workstations that are located in all library departments. Staff employ the system's integrated software package, which includes word processing, spreadsheet, relational database, and limited graphics. The library also has several stand-alone Zenith PCs, primarily employed for word processing and spreadsheet work.

The Macintosh arrived in the library via the back door when the director bought one for his personal use in March 1984. He proceeded to introduce its special capabilities in the library. The library now has two Macintoshes (a Plus and an SE), connected by AppleTalk to an Apple LaserWriter Plus and an ImageWriter II. We are to acquire a Macintosh II in the near future. In addition to the director, four staff members use the Macs, thus far principally for word processing, page layout, and preparation of signs and captions for library exhibits.

Use of the Mac has evolved as new software was introduced. For example, in 1984 library floor plans were prepared with *MacPaint*, the only graphics program then available; these plans are still in use. When *MacDraw* became available in 1985, we began to use it for preparation of library signs because of its superior word processor. *MacDraw* has proved a useful program to produce labels for end panels on the stack ranges. The figure below shows a screen display of how the labels are laid out in *MacDraw* for printing on the LaserWriter.



In the fall of 1984 we began to prepare the library newsletter, *Grist*, on the Mac. Inspecting the copies, one can watch the evolution of Mac software. The first issues were produced using *MacWrite* and *MacPaint* and printed on the ImageWriter. For initial issues we physically cut and pasted to achieve a two-column format. We next switched to a manipulation of the *MacWrite* screen to prepare the two columns on separate pages — the left column on one page, the right column on a second. We then printed the columns sequentially on the ImageWriter, rolling the paper back after the first column was printed. If you were careful in placing the paper, you could even get the lines in the two columns to match up.

When *MacDraw* appeared, we changed to it and found it did a fine job for page layout. We could lay out the multiple columns easily on the page, inserting graphics as desired. By 1986 we began to print the newsletter on the LaserWriter. Late in 1986 we started to use *PageMaker* for newsletter layout. We prepare text either in *MacWrite* or Microsoft *Word*. We use a certain amount of electronic clip art and also employ ThunderScan to digitize other illustrations. Several of the library information guides have been prepared on the Macintosh; the *MacPaint* library floor plans are featured in one guide and a self-guided tour in another.

One can also watch the evolution of Macintosh software through the library's annual reports. The 1983-84 report featured text entered in *MacWrite* and tables and laid out in *Ready,Set,Go!* ,with tables prepared in *Excel* and printed on the LaserWriter. The Macintosh has also proved a good tool to use in making overhead transparencies, and we have called upon *MacWrite*, *MacPaint*, and *MacDraw*. Recently we have begun to use Microsoft *PowerPoint*, a specialized program for desktop presentations.

Figure 2 is a screen display from *PowerPoint*, showing in miniature a group of transparencies prepared for use in a library workshop.

As editor of the state library association newsletter (*NYLA Bulletin*), I use the Mac to prepare camera-ready copy for each issue. To simplify some aspects of text preparation we download text prepared on a DEC computer at NYLA headquarters in New York City. (We use a Prometheus modem and *VersaTerm* communications software.) This form of connectivity is a current thrust in our library, and we look forward as well to connecting the Mac with the Altos system and the stand-alone Zenith PCs. The Altos system has proved an excellent computer for its tasks, but we know that the Macintosh will give it a very special enhancement. At the present time our computers work peacefully at their separate tasks, and we look forward to their working together in a more dynamic way.

The Macintoshed Library -- Clemson University Library

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Equipment

Clemson University Libraries consists of the main library (Cooper) and two branches—Architecture and Business. We have seventeen Macintoshes, either Pluses or SEs, each with ' 20 MB hard drive. Most have modems and many are directly connected into an Ethernet system which gives access to the University VAX computer system (provides E-Mail and conferencing abilities), the mainframe system, and Telenet. The Administrative Offices' Macs are connected via AppleTalk with a LaserWriter Plus. All the rest have ImageWriters; thus, lines tend to form in the Administrative Offices.

Software

Unlike the early days when very few quality programs were available, today's Mac user has a virtual library of software from which to choose. After much trial and testing (not to mention a few heated discussions), we have tried to standardize major software purchases such as word processing *WriteNow*, spreadsheet *Excel*, graphics *SuperPaint*, page composition, i.e. desk top publishing, *Ready,Set,Go!* and communications *MacTerminal*. Mavericks do exist who go against this policy. For example, *MacTerminal* is too limited for Reference's End User Searching Program and others claim that *MacPaint* is just fine so there is no reason to change. Our enlightened administration, once a standard has been established, purchases enough software for Library use — no MacPirates here! Any unit is free to buy, out of its own funds, any special software that it deems necessary.

Applications

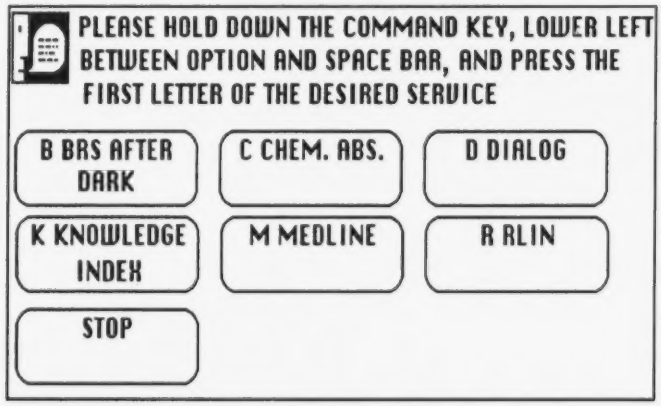
The use of the Macintosh has had an impact on just about every person working in the library. Besides the obvious use for word processing, consider this partial list of uses.

Acquisitions:	Reports on funds available, spent and encumbered (*Excel*).
Administration:	Accounting for supply and other accounts (*Excel*).
	Numerous forms (*WriteNow*).
Circulation:	Letters for long overdues, missing books, etc. (*MacWrite*).
	Makes signs and notices (*MacWrite* or *MacPaint*).
Documents:	Exchange list for other depository libraries (*MacWrite*).
Reference:	Create specialized bibliographies (*Pro-Cite*).
	Record keeping for Online Services (*OverVUE* and *Multiplan*).
	Somewhat user friendly, online searching system (*inTalk*).
	Create informational pamphlets about the Library or Library Services (*Ready,Set,Go!* and *SuperPaint*).
	Maintain 100 page Bibliographic Instruction Workbook for Freshman English (*MacWrite* and *SuperPaint*).

Specific Examples

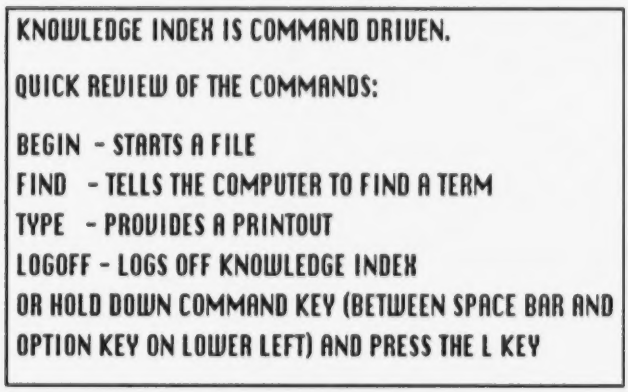
Perhaps our most innovative use of the Macintosh is in our End User Searching program. Using *inTalk* by Palantir Software, we have completely automated the procedures required to access a remote computer system. The Librarian's duty is to place the communications disk in the Mac and turn on the computer. The program auto-loads and logs into the campus VAX network. A menu screen, below, then appears giving the patron a choice of the available systems.

MENU SCREEN


PLEASE HOLD DOWN THE COMMAND KEY, LOWER LEFT BETWEEN OPTION AND SPACE BAR, AND PRESS THE FIRST LETTER OF THE DESIRED SERVICE
B BRS AFTER DARK
C CHEM. ABS.
D DIALOG
K KNOWLEDGE INDEX
M MEDLINE
R RLIN
STOP

Once the choice has been made the program takes over and connects with the remote system. Mouse lovers please note: NO MOUSE IS USED. In fact, the mouse is not even attached. This makes the program very secure as to passwords, etc. We have had no problems with unauthorized use or program hacking. During the log-in procedure, system prompts and program responses are not shown on the screen; instead, a review of the commands for that system, such as the following for Knowledge Index, is presented.

REVIEW SCREEN


KNOWLEDGE INDEX IS COMMAND DRIVEN.
QUICK REVIEW OF THE COMMANDS:
BEGIN - STARTS A FILE
FIND - TELLS THE COMPUTER TO FIND A TERM
TYPE - PROVIDES A PRINTOUT
LOGOFF - LOGS OFF KNOWLEDGE INDEX
OR HOLD DOWN COMMAND KEY (BETWEEN SPACE BAR AND OPTION KEY ON LOWER LEFT) AND PRESS THE L KEY

Please note that the review screen gives an option for the logoff command. This allows for the same logoff procedure to be used for all systems — a plus when someone is waiting and you are not sure which system is in use. Attempts have been made to anticipate problems and deal with them from within the communications program; however, no program is foolproof and we have some very clever fools. A twelve page procedure manual (*WriteNow* and *SuperPaint*) has been provided to each librarian to explain the program and provide to guidance in times of trouble.

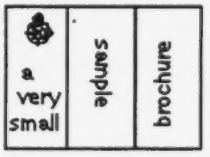
ian was extremely eager to get her hands on a Mac. The BI Workbook can now be continuously updated throughout the year in anticipation of its summer publication date. Thus, when keyword searching was added to our online catalog, our BI Librarian prepared a new section to the workbook. The ability to use graphics in a text document allows her to make examples that show the student exactly what they will see, such as:

Type **K=TIGRESS (ENTER)**
and this screen would appear:

```
LUIS SEARCH REQUEST: K=TIGRESS
LUIS SEARCH INDEX--2 ENTRIES FOUND, 1-2 DISPLAYED

1.CU: The little tigress *Smith, Wallace<1971
2.CU: Love in Greenwich Village * Dell, Floyd <1970



Type Line no. for bibliographic record with call no.
Type r to Revise a search, h for help, e for Intro to LUIS
Type command  and Press ENTER
```

This is a much better approach than the old cut-and-paste method! However, it does have its drawbacks -- since things can be revised up until the last minute, things are revised up until the last minute. Some projects seem be in revision forever.

This graphics approach to information has been carried over to our informational brochures. Each brochure is on a single piece of paper, printed in landscape format (sideways), and folded twice, as shown below.



Normally unartistic people, like myself, have been able to give in to creative urges and make passable drawings.

Shown on the following page is the online services brochure I created. The logo on the brochure was appropriated as a letterhead/memo logo. Everyone created his or her own personal stationery. Consequently, we no longer order printed letterhead; indeed, we have a good supply left over from previous years.

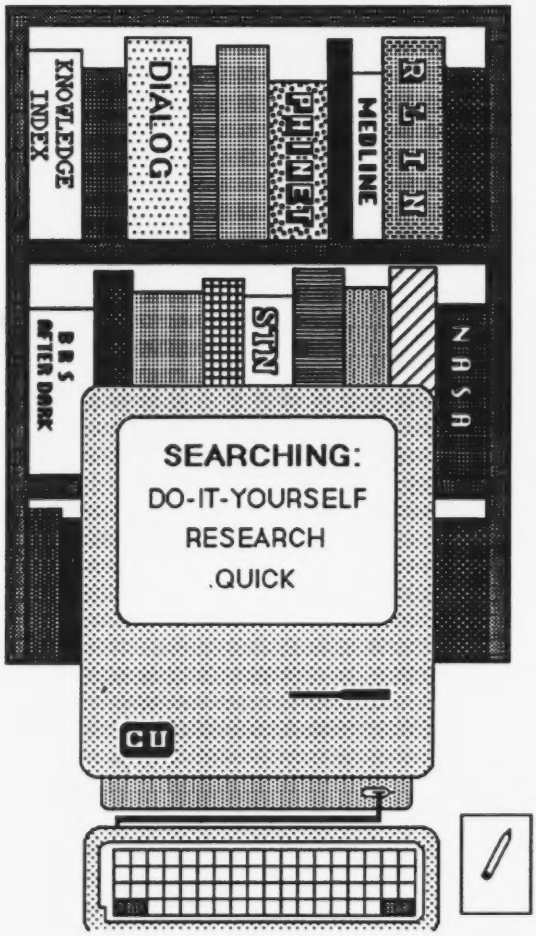
Conclusion

I have tried to give some of the experiences and uses of the Macintosh in our Library. I cannot say that the Macintosh saves us time in all cases. After all, without the Mac I would have never dreamed of designing a cover for the online brochure. Overall, it has aided us in getting our message across to the public. Its combination of graphics, text and price cannot be beat.

CLEMSON UNIVERITY
LIBRARIES

Online Bibliographic Searching

Information Retrieval Services



Macintosh Applications in the Media Services Department at Pacific Lutheran University's Robert A. L. Mortvedt Library

by Layne E. Nordgren
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In the summer of 1984 we acquired our first Macintosh and ImageWriter printer bundled with *MacWrite* and *MacPaint*. Our major objective was to improve and streamline production of instructional materials such as slides and transparencies by reducing turnaround time and improving quality. Not only was the Mac impressively successful at meeting this objective but we quickly discovered numerous other applications at which it excelled. It has now become an essential tool for providing media services at our library.

Why the Macintosh?

A number of features of the Macintosh make it an ideal computer for many of the functions we perform:

- Graphics Capabilities — The high resolution screen, mouse, and desktop metaphor make the Mac an ideal tool for producing, storing, editing, and reusing graphics. Draw and paint programs are often highly intuitive so that even young children can immediately begin using them. Macintosh graphics programs effectively remove many of the graphics handicaps that non-artists suffer from, such as the inability to draw straight lines, to visualize the final picture, or to work with the patience required using traditional tools. The Mac and software provide a toolbox enabling us to quickly produce graphic work that in the past would have taken an experienced artist many hours.
- Reduced training — The consistent user interface and excellent tutorials and manuals significantly reduce the training needed to become proficient. For example, over half of our 14 student workers have become competent at using the Mac with little or no staff assistance and training. The others have not had the time or opportunity to use the machines.
- Interactive video capabilities — During the past year the development of *HyperCard*, *Guide 2.0*, and *Mentor/MacVideo* have put interactive video capabilities in the hands of any user with these programs, a connection cable, and a compatible videodisc player. Hypertext/hypermedia features of *HyperCard* and *Guide 2.0* provide powerful interactive development platforms for customizing and individualizing commercially available videodiscs.
- Ease of transferring information between programs — The Mac provides convenient means of transferring information (both text and graphics) from one program to another. Integrating text and graphics can be accomplished by a number of different methods such as transfer by clipboard, scrapbook, or desk accessories, use of import and export filters of some programs, or use of MultiFinder.

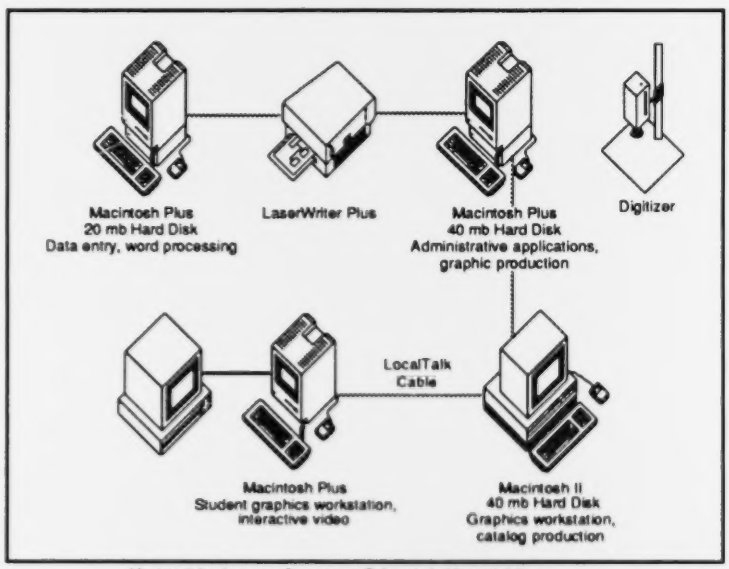
Hardware Configuration

Our hardware includes four Macintoshes, three hard disks, three ImageWriters, a LaserWriter Plus, and a digitizer. Each Mac is connected via LocalTalk cable for access to the LaserWriter. All workstations have TOPS 2.0 software for sharing and transferring files on the network as well as for spooling laser printing. Each workstation is used for a

optimized for these functions. One workstation is used for administrative and management applications as well as production of visuals. Another is used for routine data entry, word processing, and media catalog production. A Mac II serves as a graphics workstation for processing text and graphics into visuals. It is also used for media catalog production on *PageMaker* because of its speed, memory, and larger screen. The fourth workstation can be used by students in our Instructional Materials Lab for producing slides, transparencies, and graphics and text for other instructional materials. It also serves as a workstation for interactive video programs and is interfaced to a Pioneer LD-V4200 videodisc player and monitor.

Producing Instructional Materials

Our present configuration for producing artwork for visuals such as slides, transparencies, signs, etc. includes a digitizer and over 8 megabytes of clip art in *MacPaint* and *MacDraw* formats. The *MacVision* digitizer accepts any RS-170 video input from video cameras, VCRs, and laser disk players. This effectively allows us to "capture" any artwork or image in our library including both "live" images (people) and "preserved" images (from books, periodicals, video tapes, laserdiscs, etc.) *MacVision* digitizing software provides 10 different ways of processing the images. Clip art is available from one of the hard disks via the TOPS network. The clip art collection is being converted to *HyperCard* stacks to improve searching capabilities by keyword. It can be accessed within any application using the *HyperDA* desk accessory. Clip art is often used as is or modified slightly to meet the need. Original artwork is added to the collection as it is produced or captured from the digitizer.



Macintosh hardware configuration at Robert A. L. Mortvedt Library

The process for producing visuals involves a number of different people and makes use of our TOPS network. We often have one of our fast-typing student workers enter text into Microsoft *Word 3.01*. If graphics are needed for a visual, our graphics assistant student may generate the image from scratch, retrieve and modify clip art, or digitize and clean up relevant materials. Both text and graphic files are saved in folders which are published on the TOPS network. The various pieces for the visuals are collected from the local "experts" via TOPS and placed into *PageMaker* for final layout and printing by a staff member. *PageMaker* gives us WYSIWYG (What You See Is What You Get) control of

pages, keeps all the pages of a production order together in one file, and provides excellent text editing, graphic resizing, and cropping capabilities.

Printouts are used to make a variety of materials including slides, transparencies, flyers, displays, brochures, and signs. At present, we often produce between 50 and 100 visuals per week at a cost of $0.75 to $2.00 each depending on the materials and labor involved. The time to produce a single visual is measured in minutes rather than hours and turnaround time for many orders is often less than 24 hours. Future plans include adding a digital film recorder to the network and upgrading the digitizer software to provide 300 dot per inch resolution and gray scale capture.

Administrative Applications

Soon after using our first Macintosh, we began to discover numerous other administrative applications that could be accomplished more quickly and effectively with the Mac. Word processing, first with *MacWrite* and later with *Word 3.01*, improved our paper output as well as efficiency. Regularly changing documents such as job descriptions, storyboards, pricelists, memos, supply lists, instruction sheets, etc. are saved and used again in different contexts, often with only minor modifications. Spreadsheet software such as *Multiplan* and *Excel* has reduced the workload of budgeting and accounting by performing calculations and predictions automatically. Information for decision making is readily available and it is easy to perform "what if" calculations. *MacProject* has been useful for planning projects, locating critical paths, and communicating project plans with those involved so they have an idea of the whole process. On several occasions we have analyzed our decisions using *DecisionMap* software. Although the software does not make decisions for us, we have used it to analyze what factors have the greatest weight in determining our decisions.

We use *HyperCard* to provide media information about each classroom, lecture hall, and meeting room on campus. The database is accessed with a map of the campus showing all the buildings. Clicking on a building brings up a floor plan of the building; clicking on a room brings up a floor plan of the room showing the relevant information for media usage such as media equipment, screen size, location of lights, room dimensions, audio reinforcement, etc. Ordering of supplies is facilitated using *Excel* as a database. Inventory lists can be generated by item or location. Ordering lists are easily generated from inventory results. Our master database of selections on cassette tapes and compact discs makes it possible to search the database by composer, selection title, or disc number to avoid duplication in new selections.

Producing Media Catalogs

We have been using the Macintosh for over three years to produce visual media (films, videos, laserdiscs, slides) catalogs. These catalogs have improved patron access to our media collection by providing subject listings and brief descriptions of each title. At present, the catalog includes a title section of 101 pages and a subject section of 60 pages.

Word 3.0 and *PageMaker* are excellent complimentary tools for catalog production. Word is a fast and powerful word processor which is needed for efficiently entering, formatting, and editing data. Word is packaged with a dictionary to check spelling and typographical errors. Multiple windowing allows quick editing, checking, and cutting and pasting between files. The "find" function is useful for going directly to a particular entry for editing and updating. *PageMaker* provides precise control over page layout but with the disadvantage of low word processing speed compared to *Word*. Using these two programs we can efficiently create yearly catalogs, supplements, and special topic catalogs.

The title section is created by typing in WLN (Washington Library Network) card catalog data into *Word* and expanding it to fit our descriptive and topical access needs. Entries are then edited and formatted for style as needed. After all obvious corrections have been made, the text is placed into *PageMaker* for a proof copy. The proof copy is checked for errors which are corrected in the *Word* document. The final version is placed

into *PageMaker* for final formatting, addition of page numbers, and placing of index letter tabs.

The subject section is the most time-consuming part of the catalog. Entries from WLN come with subject headings for the card catalog. We use some of these as well as add others that improve access. Subject headings are attached to title listings and are then collated one at a time into a subject listing using the cut and paste functions of *Word*. The collated subjects are placed into *PageMaker* for a proof. After corrections have been made the text is used for final page setup and formatting for alignment and styles.

A final laser printed master of the catalog is made when both title and subject sections are completed. The master is sent to the University print shop for two-sided copies. Pages are collated and stapled into catalogs for distribution to patrons. Three of the catalogs are placed into three-ringed binders for use at our front desk and a fourth is kept at a Macintosh for marking corrections that need to be made. Periodic updates are printed as needed.

We also produce catalogs of classical music and jazz selections on compact discs and cassettes. They list every selection on each disc or cassette by title as well as by composer or performer. The process is similar to that for visual media but uses *Excel* for sorting data by fields. Information from WLN is entered into an *Excel* database with fields for title, composer or performer, producer number, and call number. Each selection on a compact disc or cassette is entered as a separate record. Titles in more than one language are given separate entries for each language and cross referenced to improve access. The file can then be sorted for both composer or performer listings and title listings. Each sort is saved as a text only file and imported into *Word* for formatting. The title section is manually resorted to deal with indefinite articles such as "a", "the", "le", "der", etc. Each entry or record is then aligned and formatted for style. The file is imported to *PageMaker* for a proof which is checked against cassettes or compact discs for accuracy. Corrections are made in the Word file and then placed into PageMaker for final printing of a master.

The current master files of visual and audio media data are available on the TOPS network for quick and easy customizing and individualizing of the information for patrons. Special selections of titles can be pulled out of the title file using multiple windows and the cut and paste functions of Word. Titles are selected using the subject section to decide which topics of the catalog are to be made into a special selections listing. These titles are then placed into *PageMaker*, printed, and sent to the department or professor who requested them. Since producing the catalogs we have noted an increased circulation of materials which we attribute to improved access by patrons.

Hypermedia

Early advertising for the Macintosh stressed that it was the machine "for the rest of us." During the past year, the release of *HyperCard* and *Guide* 2.0 software have made Macintosh the interactive video computer "for the rest of us." Both programs can be configured with video disc drivers that are accessed by command or script buttons, providing a staggering array of opportunities for searching and interacting with the videodisc. The only additional hardware needed is an interface cable from the Mac to the videodisc player.

Large databases of visual and audio information stored on laserdiscs can be accessed quickly and effectively with *HyperCard* front ends. For example, the National Gallery of Art videodisc contains over 1650 still frames of art works as well as 50 minutes of full-motion video. Although a printed catalog of artist, title, and frame numbers comes with the disc, accessing the large amount of information with a remote control unit is unwieldy, requiring a user to type in frame numbers for each different work of art. To get information (such as artist, nationality, media, etc.) about the artwork and actually view the artwork, it is necessary to flip-flop between two frames on the disc. The National Gallery of Art LaserGuide greatly improves access to information and art on the disc. Searches by keyword, artist, nationality, media, etc. can be accomplished in

seconds on the Macintosh. When the search leads to a particular card, the HyperTalk script for the card automatically brings up the image of the artwork on the videodisc player while the computer screen provides relevant text information. *HyperCard* front ends are now becoming available for many of the most popular instructional videodiscs.

Interactive instructional programs are easily prepared for individuals or for use in lectures. *HyperCard*'s scripting language, HyperTalk, is simple enough that someone without programming experience can easily control the videodisc player with commands such as "video search, 1000" (find frame 1000) or "video play, till 1200" (play until frame 1200). Voyager Company offers a ready-made stack, the *Voyager VideoStacks*, consisting of buttons and other devices for interactive video development. These buttons can be pasted into interactive programs.

We are presently in the developmental stages of interactive video. We have prepared several demonstrations for faculty using the National Gallery of Art videodisc and the University of Delaware Music Videodisc Series. There appears to be great potential for individualized instruction using these tools. We are currently developing an individualized instructional program of photography information using *HyperCard* and The Creative Camera videodisc. It will provide a navigational front-end for use of the videodisc so that an individual can easily access the information they need on a topic based upon their level of experience.

Apple's new CD ROM drive may provide additional hypermedia capabilities for our interactive video "playstation." Not only will we access computer and videodisc contents, but also large CD ROM databases as well as random access into CD audio discs.❦

Macintoshes in the University of Illinois at Chicago Library: Continuity in an Environment of Change

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The Reference Department of the University of Illinois at Chicago has faced a lot of changes in the few years I've been with them. One of the things we count on for continuity is the Macintosh. New people come into the department; they waste no time learning to use an arcane command language; within days of their appointment and after a few hours of use, they're doing productive work on the Macintosh. Other people leave the department; they leave behind a legacy of Macintosh documents, stored and classified in electronic folders on the department's communal 3.5" disks; the department still misses the departed, but it can continue to build on their work.

The Mac can smooth over changes. The Library introduces a new online system; a member of the Reference Department uses the Macintosh to document it, integrating text, graphics, and screens captured in actual online searches. BRS announces price changes at the beginning of the month; a member of the Reference Department adjusts a spreadsheet created on the Mac; the Mac computes a new "average" cost for searching each file; the receptionist who books the searches can give each patron an estimate of how much her search will cost. The Library begins a major renovation project; Library administrators manage deadlines and draft floorplans using the Macintosh; members of the Reference Department plan a hypertextual "guided tour" of the remodeled building using the Macintosh. (A campus micro consultant once told me her colleagues liked working with Mac users best because they were always doing things with their machines, not just "trying to figure out the printer settings.")

Where the Macs are

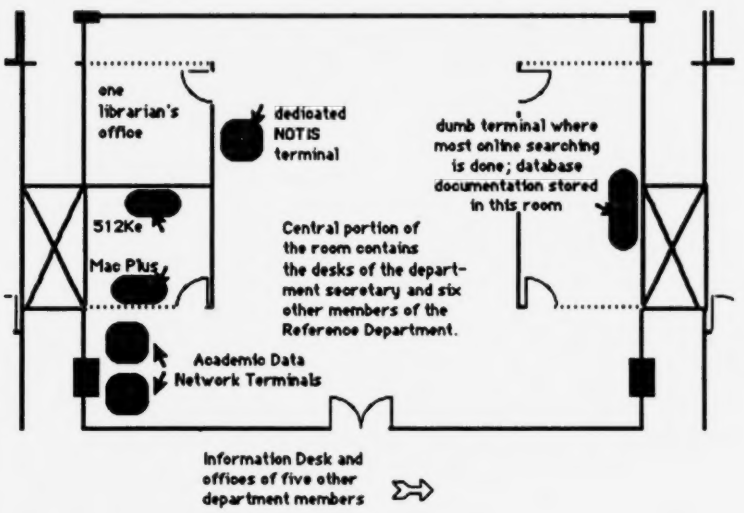
The UIC Reference Department uses two Macintoshes: a Macintosh Plus, with an 800K external drive and an ImageWriter II, and a Macintosh 512K Enhanced, with an 800K external drive, an ImageWriter, and a 1200 baud Hayes Smartmodem. We wish the paper feed on the ImageWriter II were more reliable. I think that's our only complaint. Both of the Macintoshes are in a tiny lockable office that opens off "the Center," where most of the department members have their desks. A floorplan (created in *MacDraft*, but captured in *MacPaint* for use here) is on the following page. We'll do some slight rearranging soon, moving one Macintosh out where the receptionist can use it and still watch the door, and moving an IBM PC (with an internal modem) into the Macs' tiny office, with its nearly miraculous conjunction of table (it'll have to be a bigger table to accommodate the PC), electrical outlet, and phone jack. This will also mean that the PC and one of the Macs will be close enough together that, if it ever becomes necessary, we can cable them, and transfer documents between them.

The Library Administrative Office has a Macintosh SE, a Macintosh Plus, and a 128K machine the Reference Department outgrew. Each Mac has a printer; the Plus has an 800K external drive, a Practical Peripherals 2400 baud modem (used to connect to the University mainframe) and a much appreciated 1 MB Ergotron print buffer. The Science Library has a 128K Macintosh, 400K external drive, 1200 baud Hayes Smartmodem, and an ImageWriter II. In addition, at least a dozen Library staff members have access to (and use productively) Macintoshes at home.

What We Use Macs For

In the Administrative Office three librarians use the SE to manage the entire Library remodeling project. *MacProject* maps out the phases of remodeling and projects deadlines for each associated task. Although *MacProject* would also keep track of project expenses, they chose not to use it for that. One librarian has drawn scaled floorplans of the whole building in *MacDraft*. (Early versions were done in *MacDraw*, which was faster, but *MacDraft* allows greater accuracy.)

Reference Department and Computer Search Service,
University of Illinois at Chicago


one librarian's office
dedicated NOTIS terminal
dumb terminal where most online searching is done; database documentation stored in this room
512Ke
Mac Plus
Central portion of the room contains the desks of the department secretary and six other members of the Reference Department.
Academic Data Network Terminals
Information Desk and offices of five other department members

Since the drawings include the fixed book ranges (also drawn to scale) they are useful, among other things, for individual departments to plan the book shifting they will have to do. Drawings will also be incorporated into the *HyperCard* "guided tour" stack the Reference Department is now beginning to create. Since *HyperCard* can link any number of images any number of ways, it will be possible to use drawings at different scales to "zoom in" on an area of interest.

For general word processing on the Mac we use *MacWrite 4.6* or MS *Word 1.05*. (Some of the Library administration still use Wang quite a lot, and many librarians still use typewriters. Within the Reference Department, most word processing is done in *MacWrite*.) For more specialized word processing, such as system documentation or user guides, the Reference Department often uses *MacPaint* (two examples are on the following pages). The beauty of document creation on the Macintosh is that the product of one application is so often transportable into another. It is possible, when writing a procedures manual, to incorporate relevant screens from a spreadsheet or, when writing an online searching guide, to incorporate "screen dumps" to document what the user can expect to see.

All Mac-modem users in the UIC Library are making do with *MacTerminal*. All wish they had something a little more sophisticated. For editing the results of online bibliographic searches, MS *Word* is preferable to *MacWrite*. *Word* is faster, manages longer documents, and doesn't balk at the number of "paragraphs" a moderately long search creates. The Reference Department and the Science Library use a local version of *Kermit* for uploading text files (SDIs received via DialMail, or the regular online prints resulting from a bibliographic search) to the University mainframe.

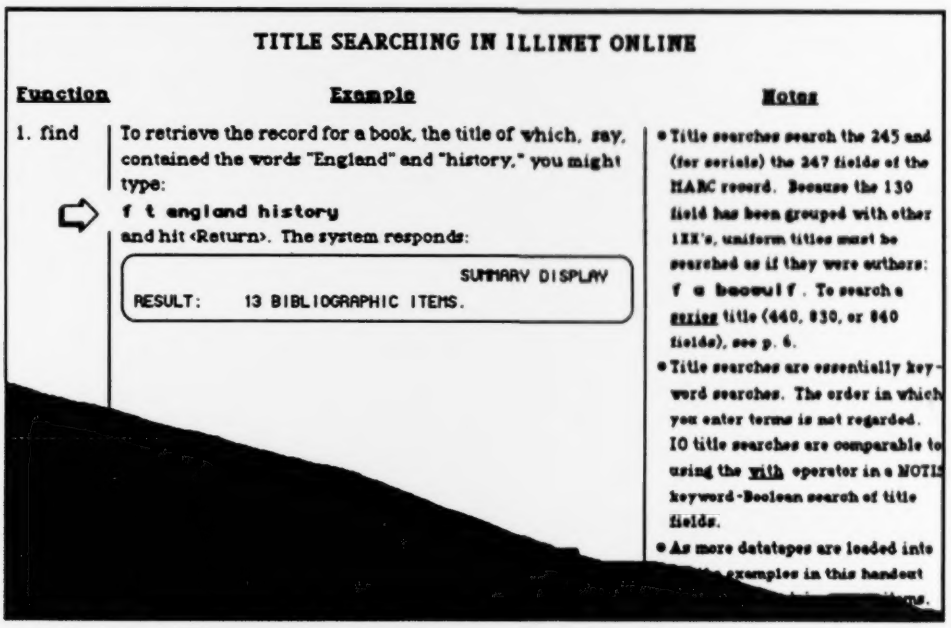
The Library budget is controlled in MS *Multiplan* version 1.10, and so are countless countable things. Since the Reference Department persists in its desire to count the number of questions it answers, the statistics coordinator is grateful we have *Multiplan* to figure the the average number posed between 2:00 and 4:00, the average number posed on a weekday requiring one look-up, and the average number posed over the phone on winter weekends, not to mention the grand totals and the standard deviation. *Multiplan* would run on the 512K, but we use it exclusively on the Plus since the Plus' keyboard has a number pad. We find *Multiplan* acceptable but not ideal for large projects since no single spreadsheet can be very large, and since it links two spreadsheets together only clumsily.

Library mailing lists and personnel information are maintained in MS *File* version 1.04. *File* will print out, for instance, internal mailing labels for the Library newsletter, in alphabetical order by department, and within department in alphabetical order by name. The Reference Department uses *File* to manage several small databases. One department member has created a database of commercial database costs which will compute the cost to the end user of an "average" search, based on twenty minutes online and twenty online prints, less the cost of Library-subsidized telecommunications. A current printed "report" sits on the counter where the Search Service appointment book sits, so that patrons have some basis for deciding whether they can afford to have a search done. Another department member has created a database with fields for the abbreviations used in the *Biography and Genealogy Master Index*, the full titles of the sources indexed, and the call numbers for the sources held locally. The printed "report" has been laminated and spiral bound, and sits on the shelf next to *BGMI*. The Reference Department has begun to explore *HyperCard* for creating other databases, such as of patrons with accounts to absorb the cost of computer searches, or of the little bits of miscellaneous information now recorded in a plastic file box at the Information Desk ("Where can I rent typewriters on campus?," "What's the student grammar hotline phone number?," "Whom do we contact when the OCLC terminal goes down?").

Relation of Mac's to PC's in the Library

Although Macs have been right for many projects within the Library, it is an inescapable fact that many of our patrons prefer to use PC's. Reference librarians have at times uploaded search results to the University mainframe so that the patron could download them again onto his own 5.25" disk, but this is awkward and time consuming. We are in the process of setting up an IBM PC as an alternative search station. Other departments in the Library use PC's, and Reference already uses PC's as OCLC and InfoTrac stations. So far it has not been seen as a disadvantage that there is not a Library standard. If ever it becomes important enough, we can invest in the cables and software needed to convert the documents.

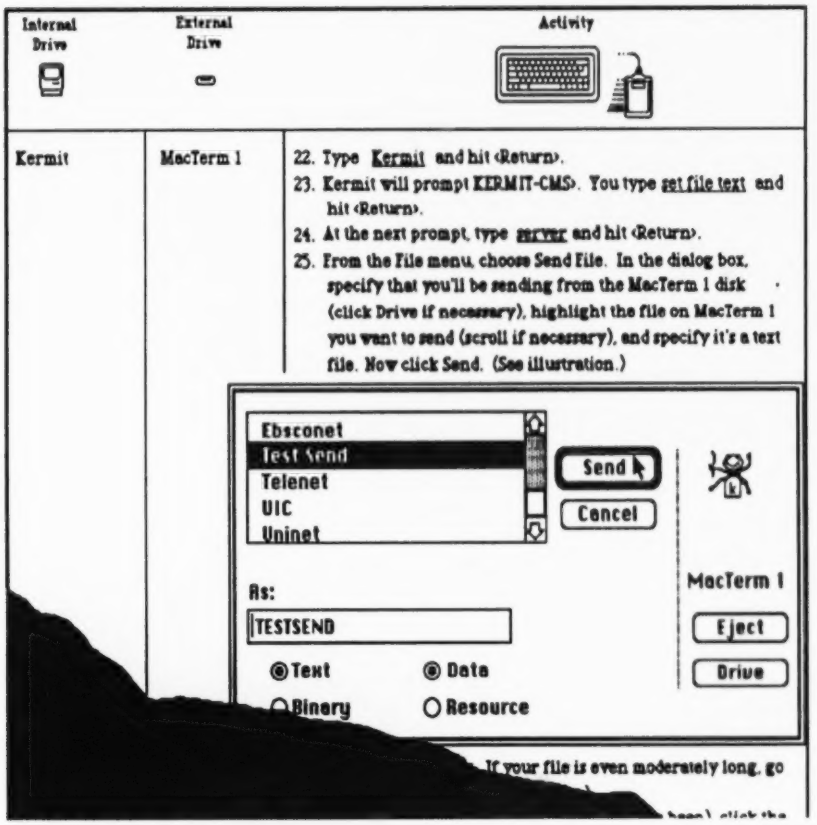
Following is an extract from a staff training document on the state's online union catalog. *MacPaint* allowed us to incorporate copies of actual screen displays into the system documentation. The entire manual was created in *MacPaint* and *MacWrite*, the "lowest common denominator" software, to ensure that Macintosh users at other ILLINET would be able to adapt the document to their own needs.



TITLE SEARCHING IN ILLINET ONLINE

Function	Example	Notes
1. find	To retrieve the record for a book, the title of which, say, contained the words "England" and "history," you might type:	• Title searches search the 245 and (for serials) the 247 fields of the MARC record. Because the 130 field has been grouped with other 1XX's, uniform titles must be searched as if they were authors: **f u beowulf**. To search a series title (440, 830, or 840 fields), see p. 6.
	f t england history and hit <Return>. The system responds:	• Title searches are essentially keyword searches. The order in which you enter terms is not regarded. IO title searches are comparable to using the with operator in a NOTIS keyword-Boolean search of title fields.
	SUMMARY DISPLAY RESULT: 13 BIBLIOGRAPHIC ITEMS.	• As more datatapes are loaded into the examples in this handout

The many "see" references in the Notes column of this manual suggest that the whole document lends itself to becoming a *HyperCard* stack. Each "see" reference could become a button leading to another part of the document. Each card could contain a button to take the user out of the documentation and into the system itself.


Internal Drive
External Drive
Activity
Kermit
MacTerm 1
22. Type Kermit and hit ‹Return›.
23. Kermit will prompt KERMIT-CMS›. You type set file text and hit ‹Return›.
24. At the next prompt, type server and hit ‹Return›.
25. From the File menu, choose Send File. In the dialog box, specify that you'll be sending from the MacTerm 1 disk (click Drive if necessary), highlight the file on MacTerm 1 you want to send (scroll if necessary), and specify it's a text file. Now click Send. (See illustration.)
Ebsconet
Test Send
Telenet
UIC
Uninet
Send
Cancel
MacTerm 1
As:
TESTSEND
Eject
Drive
Text
Data
Binary
Resource
If your file is even moderately long, go

Above is an extract from a procedural document, showing how to use the Macintosh as a search station, how to download search results from a commercial vendor, and how to upload them again to the University's mainframe. Since we do not have a hard drive, the procedure requires quite a lot of disk swapping. The first two columns of each page of the document remind the user which disk should be where. The dialog box was captured with the desk accessory *Camera*. The entire procedural document was done in *MacPaint*.

[Acknowledgements: Thanks to Louis Schultheiss, Assistant University Librarian for Budget and Planning; Renee Schwartz, Assistant to the University Librarian; and Gladys Odegaard, Assistant Science Librarian, for their help in piecing this document together!]

Public Libraries

Macintosh Computers, Developing a Local Area Network in the Public Library by Duncan J. McKenzie 27

"Nobody Here But Us Evangelists!" by Jean Armour Polly 31

The Macintoshing of a Public Library by Bill Vaccaro 35

Macintosh Computers: Developing a Local Area Network in the Public Library

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Times have changed since the first Macintosh hit the market. I can recall the time in 1984 when the Niles Library's automation consultant and I were deciding on an automation system for our administrative offices. He advised us to install a CPT dedicated word processor at my secretary's desk and two Kaypro CP/Ms, one at my desk and one at the Chief of Operations' (business manager) desk. Because we were then using an Apple IIe in the office, I wanted to know why we shouldn't use an Apple instead of the Kaypro. The consultant, although not favoring this, agreed to visit an Apple dealer with me and evaluate some software.

When we entered the dealer's shop, the first machine we noticed was the Macintosh. It had just been introduced to the market a few weeks before and was prominently displayed in the store. It was an odd looking machine. It didn't look at all like a computer should, at least not like an Apple or an IBM. It was small, cube like, and had a slot in the front for a tiny disk. It also had this weird thing called a mouse, and the mouse had a button on it that I couldn't figure out how to work. The screen was strange, too. It was very small and seemed to glow from within with an odd luminescence. The machine even had a handle built into the top so that it could be carried around. Very unusual. Not at all like a serious computer.

The original software for the Mac consisted of MacWrite and MacPaint. They were bundled, or included in the price, with the machine. Apple's original marketing for the machine showed a MacWrite document with a picture of a tennis shoe in the document. We could see that the machine was able to integrate graphics with text, but what purpose would that serve in an office where we composed correspondence, reports and budgets? You know, serious stuff. I tried my hand at the machine. I could move the mouse or pointer around but, as with all first time users, had trouble with precision movements. Weird things happened when I moved the pointer to the top of the screen, all those columns of words popped across the top. I started to get nervous not knowing what was going to happen. Maybe I'd mess something up. I was expecting an employee to come stand over me asking, undoubtedly with an intimidating tone since I was "playing," if I needed some help.

Before I could get any further along on this toy, our consultant had tagged the manager and they were ready to look at some Apple software with me. So I left the Mac to continue running its demo software and got serious about business letters and spreadsheets on the Apple. In the end we agreed to our consultant's recommendation for the office automation system. We installed a CPT dedicated word processor and two Kaypro CP/M machines in the administrative offices. They would work fine for our business plans. The CPT had 128K of RAM, and the Kaypros had 64K. Those were the norms back then. How strange that sounds when today even the smallest Mac has 1,024K. But one must remember, I'm talking about one of the early days for micros- 1984! How things change in only four years.

Our first Macintosh crept in through the back door later that year on October 29. It was the original 128K machine. We already had three Apple IIes, an Apple IIc, two Kaypro CP/Ms and a CPT dedicated word processor, so microcomputers were not new to our library. Yet this strange little cube was foreign to us. It worked so differently — unlike anything we were used to. It was purchased as part of a grant for our public access Computer Lab. As is customary with any new computer for our Lab, it was placed in a central staff location for a couple of weeks of staff exploration before being installed in the Lab. We all "played" with it, drawing nice little pictures, adding words and printing them out. They were cute but, again, was this machine a serious computer? Did it have applications for business or was it just a cute, gimmicky machine? To be honest, something kept telling me we were going to discover applications for this Mac, and it was going to be an important tool for us. To be even more honest, I had a hidden agenda in getting this Mac as part of a grant. It gave me the opportunity to get one in the building and get my hands on it!

Macintoshed Libraries

It's often not easy to get the first Mac into a company. Libraries are no different, and four years ago, when the Mac first appeared with no software to support it, it certainly wasn't considered for our office. We all know the prevalent mentality that MS-DOS is the only serious computer. It is easier, though, today than it was two or three years ago. Early pioneers in the practice of pushing aside on their desk the company issued IBM and bringing to work their own Macintoshes have made this much easier for "the rest of us." And let's not forget, the Macintosh was originally heralded as the "Computer for the Rest of Us." Often times, it's still a struggle to get that first Mac into a company or a library, but once the first one's in, it's like getting your foot in the door, and the rest will follow.

Today our library still uses the original 128K Mac, although it's been upgraded to a 512K. In addition, we've added a 512Ke, a Plus, an SE and, very recently, we purchased three more SEs with 20 MB hard disks. Two of those three are replacing the Kaypro CP/M machines in our administrative offices. They are networked not only with our Macintosh Local Area Network (LAN), but are also connected to our secretary's CPT dedicated word processor. The Mac on my desk has 2.5 MB of RAM and a Full Page Display screen. We've come full circle since those early days in 1984, and the Mac has earned its place in the administrative offices.

There's one more point I'd like to cover before I begin describing the tasks performed on our Macintoshes. I need to explain why we've switched to the Macintosh as our "company standard" machine. We have a staff of 50 and over 28 microcomputers in our library. Our Computer Lab has a variety of computers:Apple IIe, Apple IIGS, Macintosh, Commodore 128, AT&T 6300 (MS-DOS) and Texas Instruments. In staff areas we have Apple IIe, Apple IIc, Kaypro CP/M, Kaypro MS-DOS, CPT and an old Zenith. As you can see, the staff have access to a variety of machines: Apple DOS, MS-DOS, CP/M and Macintosh. We've observed that staff members are drawn to the Macintosh. It is their machine of choice. It is the machine from which they obtain the greatest productivity. Why? Because of its design. The Macintosh works in tandem with the way we think. We simply point and click. For example, when we're thirsty and want a glass of water, we reach for it and pick it up. It's the same concept in operating the Mac. When we want to open up a word processing program, we simply point to it with the mouse and click —it's open. On the other hand, with a MS-DOS machine, the staff are at a loss when all the screen shows them is an "A>."

The Macintosh truly has a shorter learning curve than other computers. The Macintosh user interface is a standard on most Macintosh programs. Once our staff learns how to operate one program, it's easy for them to migrate to another. Unlike programs on other operating systems, each program has a similar look and feel. Statistics have shown that the average Macintosh user will use six or seven programs. The average MS-DOS user will use only two. Why? Simply because of the superior Macintosh interface. Since Mac software all operates similarly, staff are enthusiastic about trying new programs. They change easily, back and forth, between several word processing programs, a page layout program, a graphics program, a database manager and a spreadsheet. Each program has the same look and feel. Each has the familiar menu bar and the staff can open the program, save and print their work, all with the same commands they've learned from a previous program.

In May of 1986 our Children Services' Chief requisitioned a new IBM typewriter. It seemed an odd request, to me, since they already had an IBM typewriter. When I asked why, she explained that she needed one with a dual pitch and a wide selection of typing elements. She wanted a variety of typefaces to use in her promotional handouts.

I had observed that her staff would spend a considerable amount of time in the Computer Lab on an Apple to create graphics. They would then paste these graphics onto their typed program flyer and send it off to be duplicated. What they were doing, of course, was integrating graphics and text in the usual manner, cutting and pasting with scissors and rubber cement. I suggested that instead of purchasing a new typewriter to get a larger variety of fonts, they consider a Macintosh. It provided the ability to change typefaces, point size (similar to pitch sizes), and would integrate graphics, all electronically.

The suggestion was met with considerable apprehension. After several weeks of negotiating, the Chief was still not convinced, even after some demonstrations on the Computer Lab's Mac. In the end, she said she would yield to my judgement, and if I thought the Mac

was best, they would try it. Within weeks after the Mac's arrival in their workroom, the children's staff had taken to it with incredible zeal. Even the senior clerk, who for fifteen years had stayed away from the typewriter because she didn't type, was drawn to the Mac and now prepares subject heading wallchart flyers and the like. The old Selectric sits covered and has not seen the light of day. Our Childrens' staff are now experts at digitizing graphics — the process of taking a graphic on paper, inserting it into a scanner and saving the image on the Macintosh for later integration into a document. The department uses their Macintosh so much that they have requested a second machine. They often have one employee on their Mac and another staff member in another part of the library searching for an available Mac.

The third Mac to enter our library was placed in the Board Room along with a LaserWriter Plus printer. The equipment was designated our "Desktop Publishing Center." It was placed in neutral territory so that it would be available to a wide variety of staff from various departments. To introduce the staff to desktop publishing, we had a series of three in-house workshops. Gathering our three Macs together, we were able to put two staff members in front of each, do some hands-on training, and get six staff up and running with *Ready,Set,Go!* page layout software. We now use desktop publishing for a great many projects. Our basic rule of thumb is this: if the public is going to see it, it has to be done on the LaserWriter. We like the professional look it gives us.

To provide the widest access to the LaserWriter Plus, and to get the most out of our $4,853 investment in this printer, we installed the AppleTalk network, now called LocalTalk. This allows all of our Macintoshes to send items to a remote printer. For example, the Children's Department has an ImageWriter II (dot matrix) printer placed beside their Mac and connected to the LocalTalk network. They can either send their printing to that LocalTalk ImageWriter II or to a remote printer elsewhere in the building, such as the LaserWriter Plus in the Board Room or the second LocalTalk ImageWriter II in the Circulation Department. Other Macs in the building can choose from the same three printers. There is no longer a need for a printer at each computer location.

The fourth Mac to enter our building — and by this time they were no longer sneaking in through the back door — was a Mac SE. It was placed at the Desktop Publishing Center and the Plus was moved to the Adult Services Chief's office. I'm sure our library is unlike many medium sized libraries in that our department heads don't have secretaries. They lack adequate clerical help for all of the various typing jobs: correspondence, reports, periodical holdings lists, etc. The Macintosh allows us to produce all of these documents without the need for additional clerical help. Because the word processors have spelling checkers — some even use grammar checkers - and, given the ease of cut-and-paste on the Mac, those who formerly would have balked at doing their own typing, are doubly productive on the Mac.

Our Adult Services chief has trained her staff in use of the Mac and they are currently producing the following documents: a comprehensive listing of all periodical holdings, a subject index to the periodical collection, bibliographies, signs, book stack end panel labels, mailing labels, computer software directories, schedules, standing order files, indexes to Apple magazines, IBM magazines, Macintosh magazines, etc.

Staff from the Technical Services Department use the Desktop Publishing Center to compile a videotape catalog. The Maintenance Department uses the same station to keep records of our computer repairs, and the office uses it to log software purchases and upgrades. The Circulation Services Chief has just received an SE with an internal 20 MB hard disk. This machine will be used by department staff to keep a directory of all households having library cards, to automatically print letters to new card holders, to prepare new book lists, to compile the usual correspondence and reports, and to prepare staff manuals.

As mentioned earlier, the two office Kaypros have been replaced with new SEs. We will be using them for budget preparation and analysis, equipment inventory, totalling and analyzing library district election results, and the usual correspondence and reports. My SE with theRadius Full Page Screen allows me to see the full 8-1/2" by 11" document at once, rather than the usual portion of a page displayed by the Mac. Since I do a large amount of document preparation, such as annual reports to the community, service brochures, etc., I can really take advantage of the full display. Both the Operations Chief and I draft our own

correspondence and reports on our machines. After we've finished, we run a spell checker against the document, and then send it electronically to the secretaries' dedicated word processor. The secretaries then take over and check our grammar, make any necessary editorial changes, and handle the printing of the document. As you can imagine, my secretary has actually taken on a larger role. She is now free to utilize her administrative skills and become an Administrative Assistant. We have completely eliminated the need for clerical typing and, thereby, both her time and my time are freed up for other activities.

The latest experiment with our LAN is the installation of TOPS software for file-sharing. In brief, TOPS makes a portion on one machine's hard disk available to other network users. To give an example of how this might be used, Children's could prepare the annual summer reading flyer in their department, save it on their disk, "publish" it using the TOPS software and thereby make it available for me to access the document from my computer and edit the flyer.

Many people visit our library to see our use of microcomputers and the LAN. They are usually quite impressed and think we're quite fortunate. They can't imagine the same set up at their libraries. I don't know why not. It begins with a vision. Apple has a slogan that reads "Changing the world, one person at a time." I guess I'm part of that evangelical team. There are others of us throughout the country doing the same thing, proving that Macintoshes are very productive machines, that there are inherent benefits in placing one in a workplace and letting the staff have a go at it.

My vision has been to alter drastically the image of our library and the way we do our work. One part of this has been to create a very polished and professional look for our publications and reports. In addition, I want to create an enthusiasm in the staff for preparing such reports. I want to turn on their creative juices. We are experiencing the success of this vision. Management and marketing consultants have heralded our results. People are drawn to our reports and brochures and are eager to read them.

The Macintosh is a creative machine and, as a result, it releases creative energy. In fact, recently the Macintosh played a major role in the public information campaign in a successful attempt to obtain an 88% increase in our operating tax levy. All press kits, complete with graphics, all handouts, display boards, and large 3-1/2 foot by 4-1/2 foot signs were produced on the Macintosh and LaserWriter Plus.

Is our library unusually wealthy that we can afford all of these computers? To be sure, we are not. What we have done is taken a cautious and deliberate approach to the development of our automation network. The goal has always been to make our employees productive and, at the same time, to have them feel comfortable using a computer. We have proven to ourselves and the Library Board that the Macintosh is a way to achieve this. Believe me, at every step along the way, we had to justify, justify, and justify every computer purchase request to the Board. They have been supportive because we have achieved an increase in productivity with these machines.

We began this vision four years ago. We built upon our dream over a period of time, and we will continue to build. The entire network was not installed overnight, and it is not yet complete. It will continue to expand and develop. We budget $5,000 a year for microcomputer purchases. This generally provides for the acquisition of two to four new Macintoshes through Apple Computer's Educational Buy Program.

Our network has grown from the one lonely little Mac 128K of four years ago to our present seven Macintoshes, one ImageWriter II printer, two LocalTalk ImageWriter II printers and a LaserWriter Plus. The more we work with the equipment, the more we discover it can do and the more creative we become. What next on our horizon? We'll probably begin our own in-staff Macintosh Users Group to share the things we're learning.❦

"Nobody here but us evangelists!"
Macintosh at the Liverpool Public Library

by Jean Armour Polly
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Perspective is a funny thing. Back in the old days of 1981, we thought our 48K Apple II+ was the hottest thing to roll out of a garage since the 1964 and 1/2 Mustang. It did what we wanted, and the public lined up to use it. Even the lo-res Color Demosoft on the System Master knocked our socks off.

Pretty soon, though, it wasn't enough. Oh sure, by the next year we had two of them, and then in 1984 we started circulating software for home use. We added voice synthesizer boards, Koala pads, a modem or two. By '85, we were heavy into carriers and put up our electronic bulletin board. But something was still missing. We'd look up from a spreadsheet, stare off into the West, towards Cupertino, and whisper, "Woz... is that all there is?"

Then the tide turned, a new day dawned, and it was the first day of the rest of our lives. The State of New York, in all its wisdom, bestowed upon us 25K, and I don't mean RAM. We were to go out into the marketplace, and buy electronic things, and furniture to put them on. A turning point had been reached. We faced the torment of **what other computers might be out there.** A great Blueness descended.

Should we go with IBM? We tossed, we turned. Would Eric Anderson make fun of us in his newsletter?

Firmly, confidently, we compromised. We bought a IIGS, a IIe, a Commodore 64, an Atari 1040 ST with Casio synthesizer, a Panasonic Business Partner of the clone variety, and **3 Macs.** Now the Plus and the SE were for the public you understand, to get them to the public LaserWriter Plus. And the third Mac was dedicated to running a reservation booking program for all of the other computers in the ComputerWorks Lab. We used *Front Desk 5.0* from Layered. It worked (most of the time) and gave great statistics on how many people used which computers, what statistical class they were in, how much money was made in disk and paper sales, etc. (Currently, the computers are in use about 1,000 hours a month, and over half the use is by adults.)

The staff longed for friendly little platinum boxes of their own. Bribes were offered. Which departments would get the coveted Macs first?

Of course, the Director got one. So did her secretary (who is just about ready to use her old IBM Selectric as a doorstop). And the Graphic Arts people got two, one with a "portrait" Radius display. We set up a booking system for the staff Macs. Bribes for computer time were offered. People began showing up before work, and staying long into the night. The soda machine vendor was asked to stock Jolt Cola ("all the sugar and twice the caffeine!).

We ran a TOPS network using both AppleTalk and PhoneNet. The phone cord was cheap to run through the building, and the network didn't seem to suffer by having some nodes AppleTalked and some PhoneNetted. The staff network shared two LaserWriter Pluses, one on each floor. The favorite game of "waiting for the printer", especially after the Graphics Arts people had just sent a long document (sideways, with multiple fonts and scaled, scanned photographs), began. (This was remedied when we later upgraded to TOPS 2.0, which included a terrific spooler.)

But then a funny thing happened. Apple used a "creative marketing technique" and doubled-shipped our order. Thus we found ourselves with **two** LaserWriters and sundry other things. We made an impassioned plea to our Board. "It's a gift from the gods," we argued, "you don't want to mess with them!" We also pointed out that people in the public lab were clamoring for more LaserWriters, especially those Atari ST types who wanted

one of their very own, to say nothing of the public Mac power users who tied up the printer for 45 minutes, printing complex and arcane documents, holding up everyone else. This extra LW would be christened "Rover" and would travel between staff and public networks. And then we had a fourth LaserWriter Plus. As it stands now, Rover lives more in the public lab than anywhere else. He's in use by the Macs and the Atari, and soon, will be accessed by the PC clone.

Somewhere in the past year, we got a Shiva NetModem, so that all our staff Macs could use our one data phone line. It worked like a champ. You got to it via Chooser, and it put a little modem up in the top of your screen. The data send and receive lights worked on it, and you could hear the dial tone, carrier, etc. through your Mac's speaker. It was great for DIALOG, ALANET, or what have you.

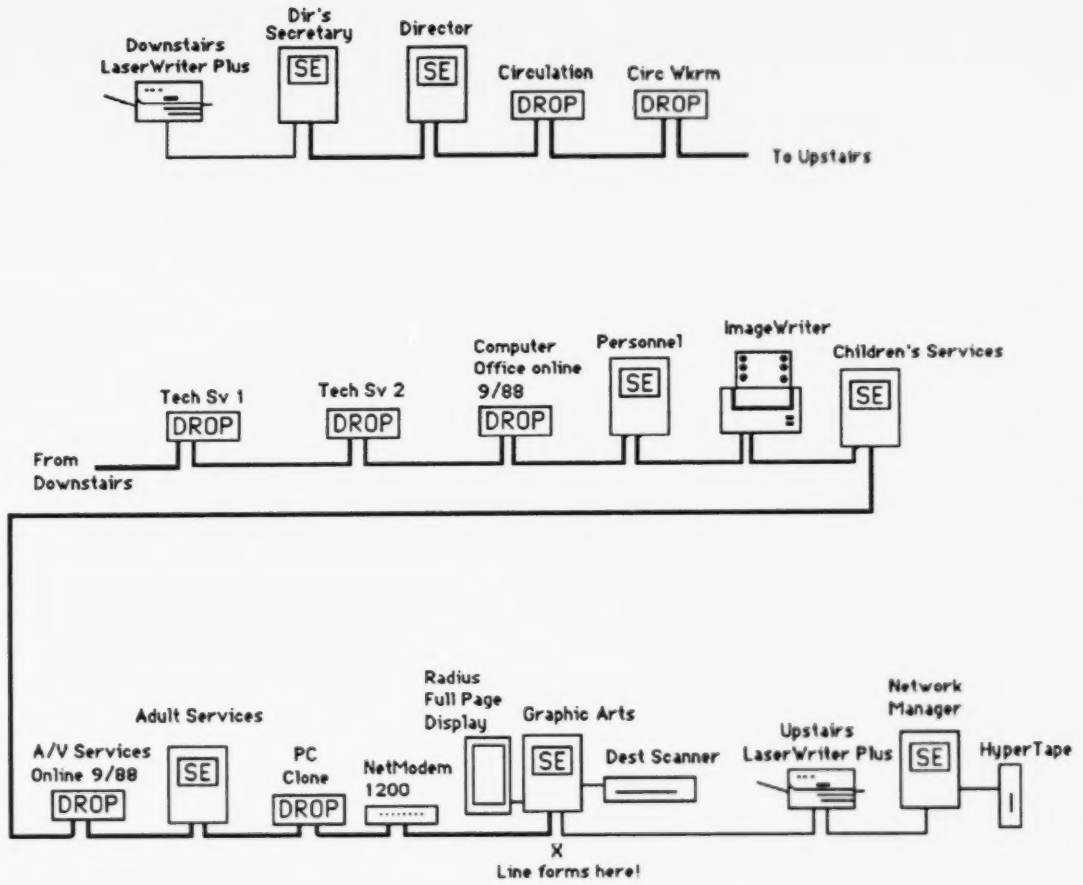
And we needed a tape backup unit, and have found happiness with General Computer's HyperTape. It's a "mountable drive", that is, it showed up on the desktop just like a disk. You could do all the usual Finder functions on it (open, save, etc.) if you had the time. We could also back up everyone's hard drive over the network, or carry the unit easily from office to office. Another plug for General Computer: we use their SCSI HyperDrive on our Apple IIe, which is equipped with an Apple SCSI card. Library files and our BBS run flawlessly using it.

One of the very best things is the DEST PC Scan Plusscanner. We keep it on the staff network, as a SCSI device on the Radius/graphic arts Mac. It has been invaluable for making computer clip art out of anything we can find. We've used copyright-free graphics from Dover and other companies, and scanned maps, logos, photographs (16 shades of grey), and just about anything else that's flat and can go around a roller. If it's in a bound volume, we photocopy it and scan that. We also offer this service to the public, charging $1.00 per piece. The patron must supply his own 800K initialized disk, and sign a form stating that the material is not copyrighted, among other things. The scanner also is an optical character reader. It reads about 12 typefaces, working best on default fonts like pica and courier. It will read many dot matrix printouts, such as ImageWriter text printed at 12 pitch. We have a huge procedures manual, which was not word-processed. We find that we can easily scan the pages, and convert it to a MacWrite or ASCII document. We also offer this service to the public, at $1.00 for the first page, $.50 for each additional page. You can tell how easy or hard a time the scanner is having from how the first page "reads." If it scans poorly, we don't proceed to the next page, just return the document to the patron, having charged for the initial page only. We have scanned database printouts, legal court motions from a lawyer's office, and many other things.

Right now we hunger for more memory, larger storage capacity drives, and High Sierra drivers for the CD ROM drive. We have the Grolier Encyclopedia and Microsoft *Bookshelf* for public use on the PC clone — it will be nice when more comes out in Mac format.

This year four more departments have received or will get Macs. We hope to get an electronic mail system going this summer. Meanwhile the circulating software collection is up over 500 titles. Included are disks for Apple II, IIGS, Commodore, Atari 8 bit and 16 bit, IBM 5.25" and 3.5", and Macintosh. It's extremely popular. And we have our own user group, the MacEvangelists, which consists of library staff, local newspaper Mac enthusiasts, and other professionals using Macs. Every month we meet at a different local eatery, start our meeting there, and then move on to the Library, newspaper, or wherever the topic of the evening is being discussed.

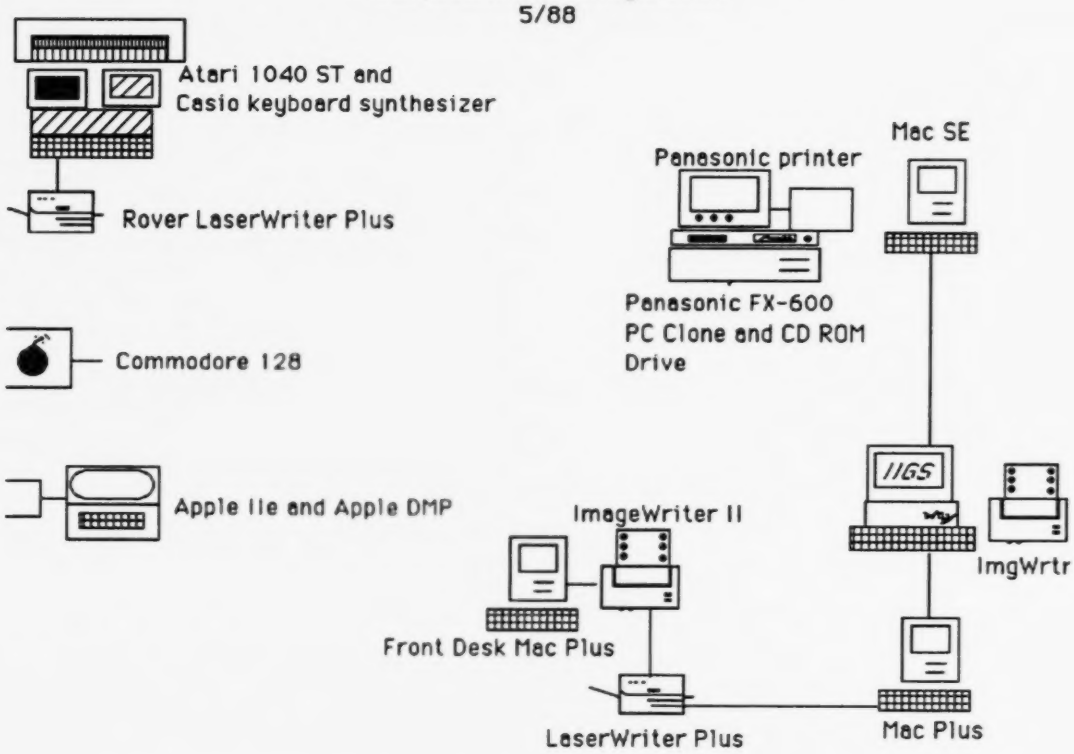
I guess you could say that though we have had a long relationship with many types of computers, it's the Macs that have transformed the staff, revitalized the public computer lab, and made the graphic arts people ecstatic. And, Eric Anderson has yet to say one rude thing about us.❦



Liverpool Public Library
Staff Network
May, 1988

AppleTalk
PhoneNet

Liverpool Public Library
ComputerWorks configuration
5/88



The Macintoshing of A Public Library: The Sulzer Regional Library Experience

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The story of the Macintoshing of the Conrad Sulzer Regional Library first requires a brief history of the regional itself. After nearly 54 years of service to the Ravenswood-Lake View Community and the North Side of Chicago, the Hild Regional Library, one of the two regionals of The Chicago Public Library, moved in September 1985 to a new facility named after Conrad Sulzer, the area's first European settler. The cultural diversity of Sulzer's service area ranges from American Indian to European to Southeast Asian, and represents over 80 languages.

Constructed at a cost of $5.5 million, the Sulzer Regional Library is a two-story brick building which contains 65,000 square feet, double that of the Hild Regional. It offers additional public services, space for 250,000 books, 20,000 audiovisual materials, seating for 280 patrons, and auditorium seating for 200.

Macintoshed Libraries

The regional's experience with the Macintosh began in early 1985, shortly before the impending move to new facilities at Sulzer, when the Hild Regional Library received an anonymous gift of a Macintosh 128K computer, complete with external 400K external drive, and an original ImageWriter I.

It was relegated to the Audiovisual Section where it was underutilized for several years. The only software that was available for it were *MacWrite* and *MacPaint*, which was bundled with the Macintosh, and a donated copy of Microsoft File. During this period, it was intermittently used by the AV staff to maintain a master title list of the video cassette collection, an abbreviated inventory of the audio cassette and compact disc collections, create signs, and for occasional word processing chores. It was rarely used by the rest of the Hild/Sulzer staff.

Although some of the problems with its underutilization were caused by lack of knowledge or initiative on the part of the staff, the underlying causes were and are still inherent in the library system which has been slow to adapt itself to new technology, especially that of the personal computer. The effort to introduce personal computers began in 1981 at the North-Pulaski branch where Patrick Dewey and Marvin Garber began a bold experiment, which resulted in the first electronic bulletin board service to be run in a public library, despite opposition from the, then, library administration. Since then, personal computers have been introduced in an,albeit, uncoordinated fashion in various branches, and Central Library agencies.

Shortly after Patrick Dewey left the system to become administrative librarian at the Maywood (IL) Public Library, Marvin Garber moved on to Hild, where, in addition to his duties in the Business/Science/Technology section, he became the regional's unofficial microcomputer expert. Using the library's Apple IIe and the dBase II relational database (running on the Apple CP/M operating system), he began efforts to automate many of the library functions that were done manually, including maintaining inventories of all book ordering.

He was the first to see the Macintosh's potential for the whole library. In November 1986, he convinced Regional Director Leah Steele to upgrade the current Macintosh to a Macintosh Plus with 1 MB of memory along with a new keyboard. (The original keyboard had been abused to such an extent that one of the keys had broken off). The upgrade path included replacing the current ImageWriter with a new ImageWriter II printer, replacing the 400K external drive with an Apple 3.5" 800K external drive, and increasing the Macintosh's disk storage capacity with an Apple HD20SC 20MB hard disk drive.

In February 1987, I transferred to Sulzer from my previous position at the Chicago Public Library Cultural Center, where I had been in charge of the video cassette collection. I also had a background in personal computers since 1981, when I started with an Atari 800. After seeing the future of personal computing in the Macintosh, I sold my Atari system and purchased a Macintosh 128K in November 1984. I've used it extensively at home and at work ever since.

My major accomplishment as head of the video cassette collection was the completion of a year-long project in which I created a comprehensive annotated 100 page catalog of the Film/Video Center's video cassette holdings using the Mac (since upgraded to a Mac Plus), Microsoft *Word*, *MacPaint*, and some clip-art.

As a result of these efforts, we were finally able to convince the administration that a personal computer was necessary for my department. Unfortunately, my lobbying efforts to get a Mac went unheeded. Because of city purchasing policy, we were informed that since the computer was for administrative purposes, we could only buy an IBM PC or compatible despite the fact that the money used for the computer's purchase was not out of city corporate funds but via money generated from our fee-based videocassette service. If it had been public access, we could have purchased a Macintosh.

We did, however, convince the administration to allow our department to purchase *MacLink*, a program that allows data transfer between Macintoshes and MS-DOS machines, on the grounds that all of the data that we had currently resided on my Mac. Interestingly enough, the Film/Video Center was eventually able to get a Macintosh Plus as part of a deal with a 16mm film distribution company from which we bought over $8,000 in 16mm films for our collection.

Upon my arrival at Sulzer as Assistant Head of the Audiovisual section, I immediately set about to maximize the Macintosh's potential. My first priority was to begin a comprehensive inventory of the videocassette, audiocassette, and compact disc collections using the existing databases created in Microsoft *File*. (Figure 1) We were originally providing patrons with a title list of our videocassette collection, along with a title list of new updates. Patrons, however, wanted to know certain things about the films —were they in color or black and white, who starred in them, how long were they, and what were they about. By completely revamping the database , we were able to provide much more comprehensive information to patrons with our monthly update lists (Figure 2)to the video collection

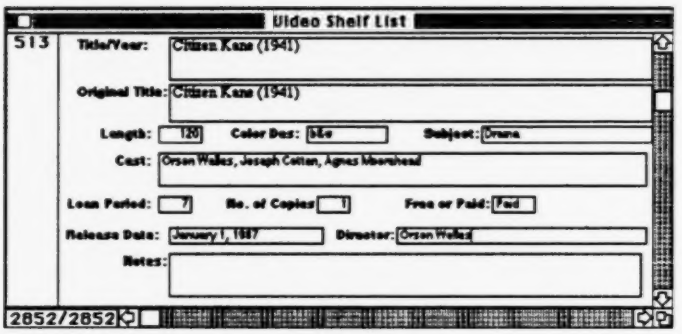

Video Shelf List
513
Title/Year: Citizen Kane (1941)
Original Title: Citizen Kane (1941)
Length: 120 Color Des: b&w Subject: Drama
Cast: Orson Welles, Joseph Cotten, Agnes Moorehead
Loan Period: 7 No. of Copies: 1 Free or Paid: Paid
Release Date: January 1, 1987 Director: Orson Welles
Notes:
2852/2852

Figure 1

August 1987 Video Supplement

Audiovisual Section — Sulzer Regional Library

Title/Year	Length	Color/ b&w	Subject	Cast
Absent Minded Professor, The (1961)	96m	Color	Comedy	Fred MacMurray, Nancy Olson, Keenan Wynn
All This, And Heaven Too (1940)	141m	Color	Drama	Charles Boyer, Bette Davi
Anzio (1968)	117m	Color	War-Drama	Robert Mitchum, Peter Falk, Robert Ryan
Asphalt Jungle, The (1950)	112m	b&w	Crime-Drama	Sterling Hayden, Jean Hagen, Marilyn Monroe
Battleship Potemkin, The (1925)	75m	b&w	Drama	
Best Foot Forward (1943)	95m	Color	Musical	Lucille Ball, Harry James, June Allyson
Big Trouble In Little China (1986) (cc)	99m	Color	Adventure	Kurt Russell, Kim Cattrall, Dennis Dun
Blue Velvet (1986) (cc)	120m	Color	Suspense	Kyle MacLachlan, Isabella Rossellini
Bonnie Franklin: Let's Tap (1984)	*90m*	*Color*	*Dancing*	*Hosted by Bonnie Franklin*
Bonnie Scotland (1935)	81m	b&w	Comedy	Stan Laurel, Oliver Hardy, June Lang
Border, The (1984)	107m	Color	Crime-Drama	Jack Nicholson, Valerie Perrine
Broadway Melody Of 1938 (1937)	113m	b&w	Musical	Robert Taylor, Eleanor Powell, George Murphy
Burn! (1970)	113m	Color	Drama	Marlon Brando, Evaristo Marquez
Camille (1936)	110m	b&w	Romantic Drama	Greta Garbo, Robert Taylor
Canyon Consort: The Paul Winter Consort In The Grand Canyon (1985)	*60m*	*Color*	*Music-Performance*	*Paul Winter, Eugene Friesen*

Figure 2

The next thing I set out to do was to promote in-house desktop publishing services. At the time, 95% of our publishing needs were handled by the Central Library's Graphics Department, and the Printing and Duplicating division. This has always been a slow and sometimes inaccurate process. Because of the demands placed on the two areas, we often had to deal with lead times of eight weeks or more in order to get printed materials back to us on time. In addition, the material that we sent had to be re-keyed. That, plus the fact that, due to budget constraints, the library was unable to hire staff for proofreading, caused further delays and inaccuracies in the final product.

I was convinced that we could do most of our signs and flyers in-house with the Mac, and duplicate them using photocopying, or by taking them to a local print shop for duplication. Since I was in charge of starting a weekly afternoon public film series, I decided to do all my publicity on the Mac using *Ready,Set,Go!* page design software, and drawn or scanned artwork. Printing was done on the ImageWriter II printer. Then I had the finished flyers reproduced at the Insti-Print shop down the street from the library.

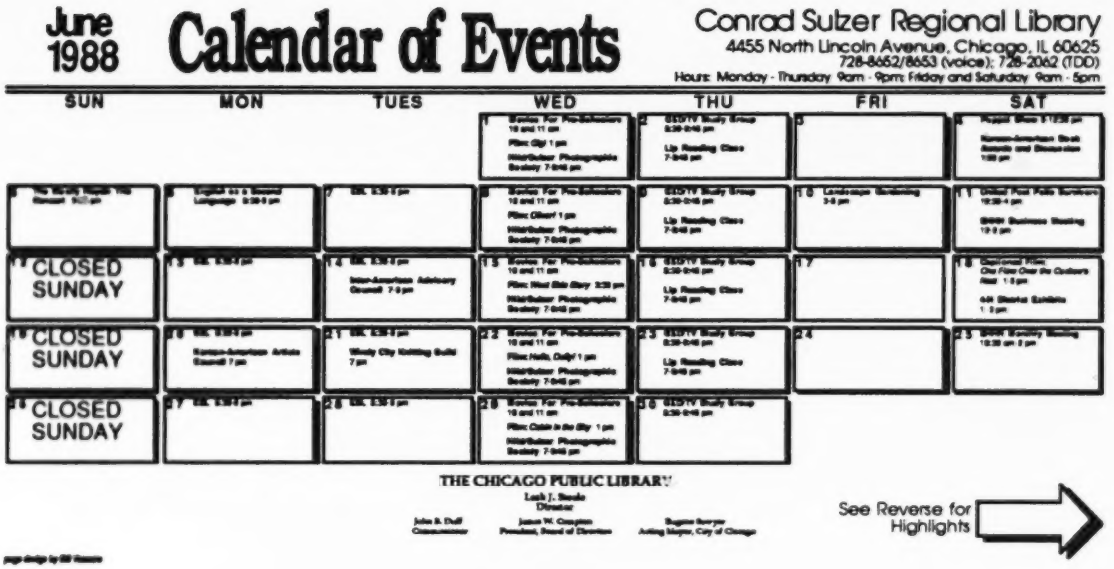
The response among the staff was immediate. Soon they were asking to have signs and flyers made for programs and other library purposes. The quality of the work done on the ImageWriter II was good, but I was determined that the library should have the near-typeset quality that a laser printer could provide.

I had volunteered to do the page design for a series of hi-tech pathfinders for my Public Library Association committee in time for distribution for the 1987 ALA Conference in San Francisco. I produced them on *Ready,Set,Go!* and did the artwork using *SuperPaint*, *MacDraw* and a steady hand. I had them printed at a nearby cooperative that rented time on Macintoshes and LaserWriters. The pathfinders were later revised and published in an issue of *Public Libraries*.

Sulzer's Assistant Director, Neil O'Shea, became just as convinced of the need for a laser printer after he saw examples of the final output. After a few weeks of comparison shopping via reviews in *MacWorld* and *MacUser* magazine, we settled on a Laser Connection LaserJet Plus printer manufactured by QMS. It is a PostScript laser printer that is the equivalent of the Apple LaserWriter Plus. The main advantage of the QMS is more memory — 2 MB for the LaserJet as opposed to 1 MB for the LaserWriter Plus. This translates into faster printing times, and the capability of adding more downloadable fonts in the future.

Soon, Marvin (who had recently purchased his own Macintosh Plus) and I had, literally, more work than we could handle as our colleagues saw the potential that desktop publishing could bring. In addition to the usual flyers and signs, we were designing pathfinders, catalogs, bookmarks, labels, monthly reports and many other high quality printed material.

Beginning in 1988, Neil and I have coordinated the production of our monthly calendar of events (Figure 3). We use a master template of the calendar which I designed in *Ready,Set,Go!* in less than five hours. The inputting of the data is done on a Microsoft *File* database by Neil's secretary. I then transfer the data into the *Ready,Set,Go!* template, and make formatting changes as necessary. The whole process now takes less than a day and the lead time needed to get the final printout to Printing and Duplicating has been cut from eight weeks to three. Using *HyperCard*, I am working on a stack that will further automate the process of inputting and data transfer.


June 1988 Calendar of Events

Conrad Sulzer Regional Library
4455 North Lincoln Avenue, Chicago, IL 60625
728-8652/8653 (voice); 728-2062 (TDD)
Hours: Monday - Thursday 9am - 9pm; Friday and Saturday 9am - 5pm

SUN	MON	TUES	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12 CLOSED SUNDAY	13	14	15	16	17	18
19 CLOSED SUNDAY	20	21	22	23	24	25
26 CLOSED SUNDAY	27	28	29	30		

THE CHICAGO PUBLIC LIBRARY

Leah J. Banks
Director

See Reverse for Highlights

Figure 3

We decided to go ahead with plans to start up a limited on-line searching service. Marvin and I began campaigning actively for a Macintosh. We felt that since our on-line searching activities would be limited in terms of money for searching, we could use the Mac for other purposes, including that as a ready reference tool. Our trump card turned out to be *HyperCard*.

My introduction to *HyperCard* came at a meeting of my local Macintosh user group less than a week after the Boston MacWorld Expo, when it was first introduced last August. A member of the staff of the Apple regional sales office in Chicago began the meeting on a Mac Plus, which displayed what the uninitiated among us would later learn was the MacWorld Expo stack. This stack was run on several dozen Macintoshes that were placed throughout the exhibit floor to give attenders on-line information on exhibits, programs, events, and things to do while in Boston. What really floored us was when the membership director of our user group began to show us a stack that he had created only a few days before. On the screen were things that most of us *HyperCard* users now take for granted, in this case, a row of rectangular buttons arranged diagonally across the screen, each with a name to denote their function. Clicking on one button showed us a list of members of the group. Another button gave information on the group, when it met and where to find more information. Each succeeding button took us to yet another area filled with all sorts of graphic images which we learned were drawn by using *HyperCard*'s extensive graphics features. What became immediately apparent was that *HyperCard* could give the rest of us, those with little or no programming experience, the power to easily create our own applications from scratch.

Several weeks later, after numerous phone calls, I finally located an Apple dealer in the south suburbs who had one last copy of *HyperCard* on his shelves. After an 80 mile round trip drive, I immediately sat down in front of my Mac to immerse myself in the program. Within two weeks, I had a working prototype of a tour stack for my library (Figure 4 on next page) .

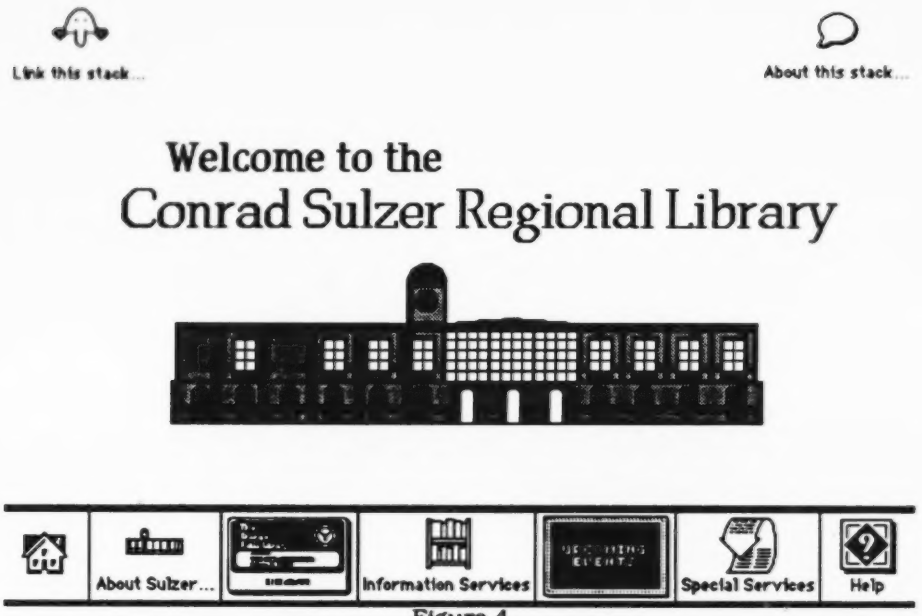


Figure 4

The current version of the tour consists of ten stacks. The main stack, 'Sulzer,' contains a main navigation card for the entire application and for the Information Services section. By clicking on the appropriate button, the user can learn a brief history of the library and its award-winning architecture, find out about current events, explore the library's special services, and even learn how to obtain a library card. (Figure 5)

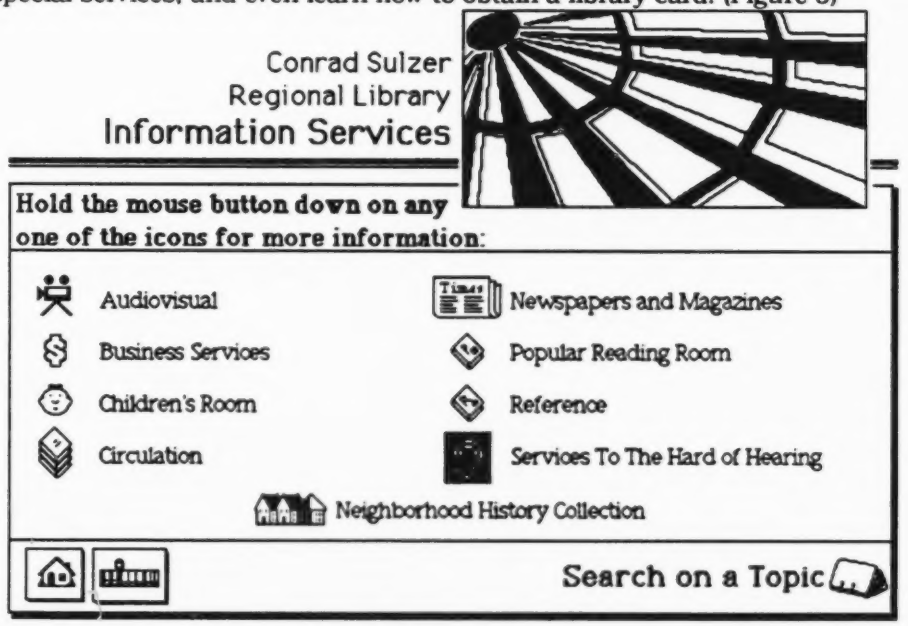


Figure 5

By using the popup menus on the Information Services card, the user can explore various service areas, from Business services to the Neighborhood History Collection. Other buttons take the user to stacks with graphic representations of Sulzer's Adult Services area

based on our quick listing of frequently used subject headings. Clicking on the find button, typing "music" in the message box, and hitting the Return key will bring the user to a card which highlights the ranges where the music books are held. (Figure 6) In addition, information is displayed showing the name of the subject, the Library of Congress call number, and the circulating and reference aisles where books on that subject is located.

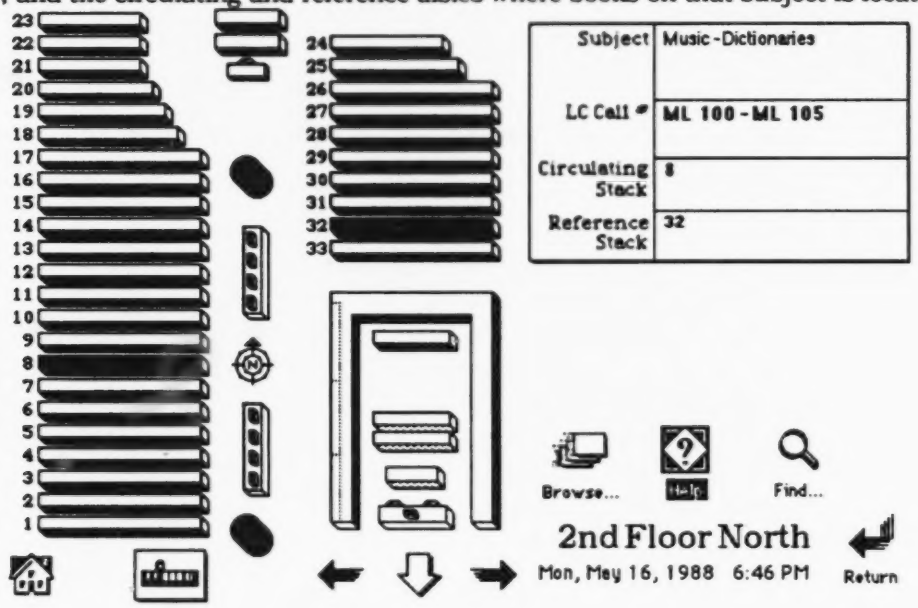


Figure 6

A similar stack shows our extensive Newspapers & Magazines collection. (Figure 7) By clicking the Find button and typing in a partial serial title or subject, the user can instantly find where a particular magazine is located for later retrieval.

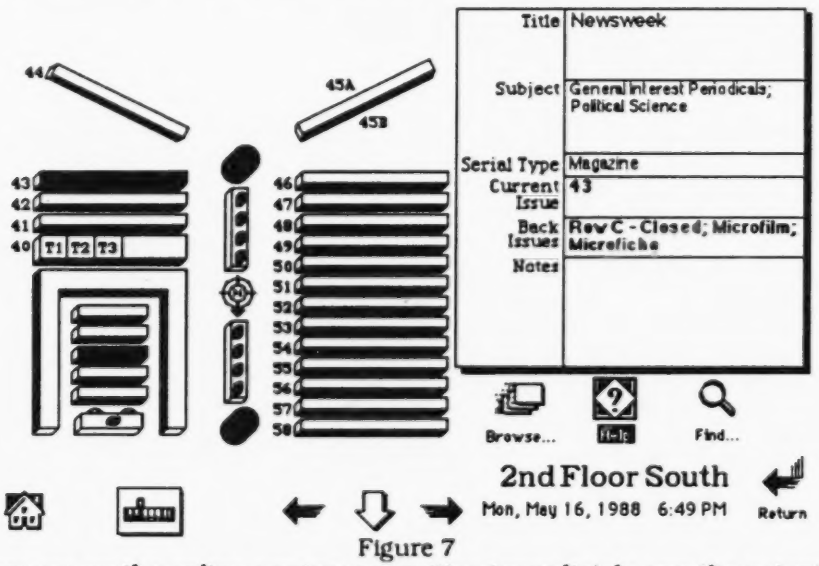


Figure 7

My colleagues on the online services committee immediately saw the potential for providing information to patrons far more quickly than by the older, more traditional

methods, and guaranteed the acquisition of the Macintosh. By late Fall, it was agreed that we would purchase a Macintosh SE with a 20 MB internal hard disk and 2 MB of internal memory, along with a US Robotics Courier 2400 baud modem.

After some comparison shopping, we decided on Scott Watson's popular *Red Ryder* communications program. Red Ryder was cheap at $80, had MultiFinder compatibility, and was the only program on the market capable of changing the display font. This was especially important, since several of the committee members complained about the small size of the screen fonts on other Macintosh communications programs. Because the service will be in a public area, printing noise is a major concern. We decided to go with a Hewlett-Packard Quiet Jet inkjet printer due to its virtual silent operation.

Now, working in the Social Sciences and History section, I am coordinating other HyperCard projects, including a stack that will completely automate our book ordering using Baker & Taylor's BATAB ordering system.

The future looks very bright for our Macintoshing efforts. We are planning on ordering a Macintosh II later this year to take some pressure off the AV's Mac and the Apple IIe in Adult Services. We are awaiting our recent purchase of Acius' *Fourth Dimension* relational database for the library's heavy-duty database management needs. We are also eagerly awaiting the release of Apple's CD-ROM SC drive and have submitted plans to the central administration for the purchase of four more Macintoshes for 1989 out of capital funds, two of which would run a public access version of the Sulzer Tour stack in HyperCard. ❦

School Libraries

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Using the Macintosh at Lincoln High School Library

by Anitra Gordon
Lincoln High School
7425 Willis Road
Ypsilianti, MI 48197

Want to publicize your media center's collection, activities, and services, and at the same time introduce a graphics wonder team to your staff and administrators? Design a flier using a Macintosh computer and print it on a laser printer.

If you were one of the library media specialists in the vanguard, helping teachers use microcomputers for teaching and their paperwork, expand that innovative role by using a Macintosh computer and a laser printer. Even if you're new to work with computers, this dynamic duo will produce materials rivalling those printed by more expensive, and laborious techniques.

A flashy three-fold red flier was designed to inform new teachers, who usually have no idea what to expect from school librarians, what to expect from the library facilities and the staff. After two years as the high school librarian,I wanted to remind the staff about the extent of the newly weeded collection as well as services provided by the staff. "There's more in the library than books," is one message of the flier. Under the heading *Services*, I list the full range of library-based assistance, from the predictable library lessons and individual work with students, to the more generally located community resources. I want the staff to know the variety of services available and ,even more important, to know how willing we are to be of service. Other sections of the flier list our behind-the-scenes activities, such as selection and processing materials.

The flier was written with *MacWrite*, with images from *ClickArt*brought in via *MacPaint* and run off on a laser printer. The columns were taped to an 8-1/2 X 11 sheet and photocopied on a commercial machine so the lines of the individual columns did not show. I then chose to have them photocopied on bright tulip red paper. I needed a dark color and heavy paper to avoid bleed through from the other side.

Many teachers complimented the library on the fliers, some posted them in their classes. The principal asked for copies for the Board. The staff were impressed with the fliers; I feel that they have been using the library for a greater variety of activities, and more teachers have been requesting our services.

I also create other materials for the Library with the Macintosh. Using *MacPaint* and *ClickArt* images, I make stationary and memos. I create a memo format and then reduce it to 1/2 page size for brief notes. I insert the pictures of a bookshelf and a Macintosh computer into the stationary to convey the essence of libraries. Books represent our main source of information, and computers one of our newest. Most of the time I print the stationary and memos on yellow paper which adds a distinctive touch to the message and quickly identifies the note as being from the library.

Letters to the families of aides

Yet another item that I produce with the Macintosh is correspondence, especially letters to the families of Library student aides . These letters are a way of thanking the aides for their work in the Library; they also serve to publicize some of the activities of the Library to their families. Often aides do not explain to their families their responsibilities, so their families have no idea what happens in the school library or what skills their children have gained. The letters, individually printed on the computer, are combinations of form letters (listing the aides' jobs) and personal comments. Using *MacWrite* I composed the basic letter and list of jobs. Customizing the letters is facilitated using the Change feature to turn Mary to Jane, and he to she. The students like these letters, and I am delighted to show them my appreciation for their work.

Yet another document that I create is an information sheet on each library aide. At the beginning of the semester, aides are given a form to fill out to help me to get to know

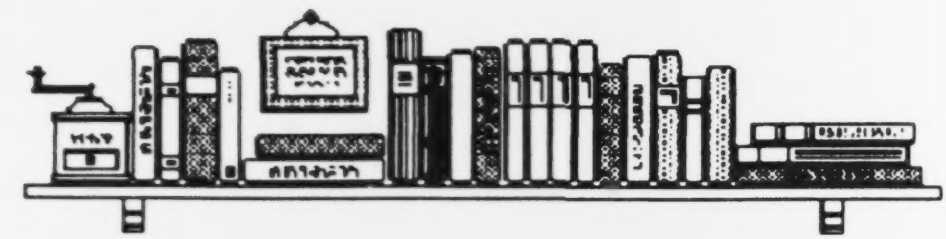
creative and tell me "I'm an alien from a far off world." These sheets are posted so library users can also learn something about the aides. One year we made colored paper flaps to cover the names, and students tried to guess the identities of the aides, based on the information provided. The flaps caused quite a flap in the library and aroused a lot of interest in the questionnaires.

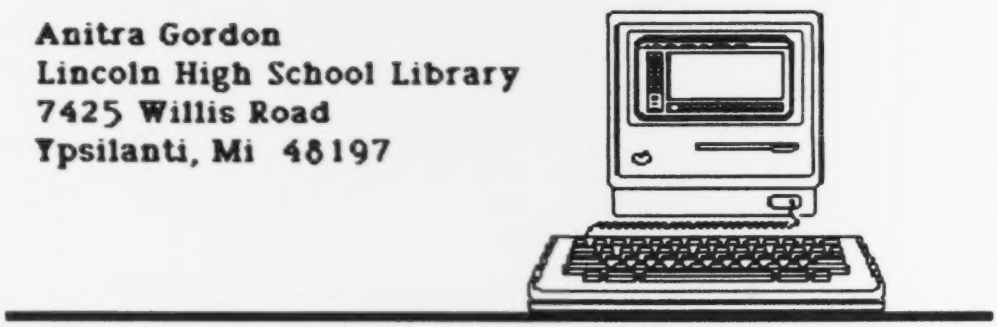
I also use the Macintosh to publicize the curriculum and services of the Library Media Center. When the Lincoln District librarians present their curriculum to the Board of Education, I type the report so it has that distinctive Macintosh flair. I choose bookshelf and Macintosh images as the logo for the cover and on each section. *MacPaint* is used to make a chart listing the materials and machines in our collections, as well as our budgets. *MacPaint* allows me to make a chart to include information we want to present in our report.

Overall, these documents have evoked many positive comments from staff and others. Hopefully, the output that I have produced with my home-bound Macintosh eventually will convince the school administrators to purchase a Macintosh and a laser printer for the District. If we get this equipment, I'll be ready with new projects and ideas to demonstrate the capabilities of this equipment as a teaching tool.❦

Notes

1. This article is a version of "Fashionable Fliers introduce Macintosh and a Laser Printer," by Anitra Gordon, which originally appeared in the January 1988 issue of the *Apple Library Users Group Newsletter.*





Anitra Gordon
Lincoln High School Library
7425 Willis Road
Ypsilanti, Mi 48197

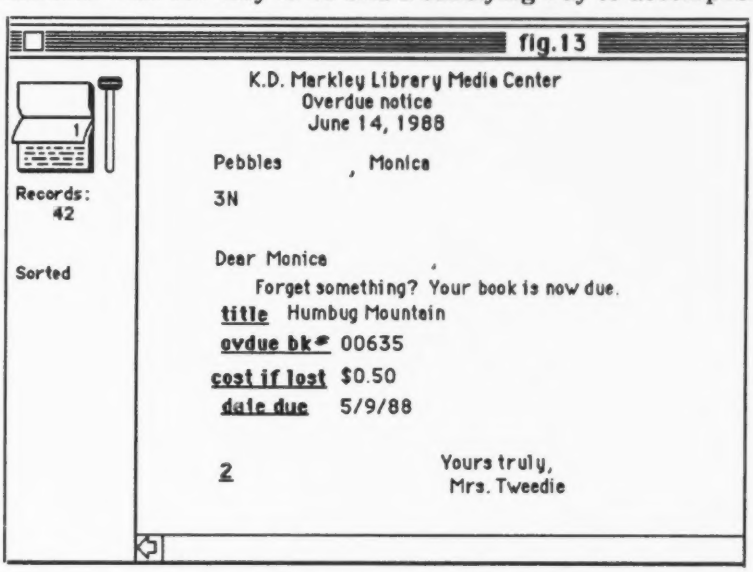
Sample Memorandum

Computerized Overdue Notices using FileMaker Plus & a 512K Enhanced Macintosh

by Sally Tweedie
Librarian
Markley Elementary Library
Church Road
Malvern, Pa. 19355

Markley Elementary Library uses *FileMaker Plus* to produce overdue notices and library management lists to ease the workload in a 510 student public school. We have a circulation system on the horizon, but no computer in the library at the present time. The time saver on *FileMaker Plus* is the Scripts feature which stores in memory the sequence of layout, find, sort, preview, print so that one can move quickly among the data, overdue notice text, and listing procedures. This database program has word processing capability to produce notices of every description, as well as the management lists the librarian needs to maintain consistent, quick, accurate overdue control. Entry time for 80 titles per week is 45 minutes plus printing time. Auto entry features allow set up of automatic machine entry for such items as current date of entry and notice number.

A valuable feature, second only to the Scripts feature, is the Look-up feature, the ability to call up from a second interconnected file such items as the full name (correctly spelled), class, and any limitations on borrowing privileges which have been imposed. My grapevine has it that two shortcomings are in process of being addressed: 1) lack of concatenation which requires a joint name field to differentiate individuals with the same last name in order to call up the correct last name, first name, and 2) lack of wrap around word processing, which causes problems with insertion of material within longer text. In brief overdue notices, this has been a minor aggravation. Longer ones can be better dealt with by beginning the letter again. Overdue notices produced with *FileMaker Plus* are easy to do and a satisfying way to accomplish an onerous task.



Overdue Notice from *FileMaker Plus*

_____ **Report card grades** _____ Please return

			1st rpt			2nd rpt			3rd rpt		
			1	2		1	2		1	2	
119	Carver	Ryan									
119	Conway	Brooke									
117	Daimion	Heather									
115	Faretty	Bobbi									
119	Foltz	Tom									
117	Harris	Tami									
120	Horner	Melissa									
120	Huston	Kim									
115	Lackman	Brad									
115	Leypoldt	Jason									
119	Magee	Brendan									
120	Mancini	Kevin									
120	Mars	Steven									
117	Montgomery	Sam									
120	Perry	Katrina									
115	Reinhardt	Amy									
115	Shenou	Maua									

Key : C=commendable
S=satisfactory
N=needs improvement

1= participates in activities
2=uses materials properly

Report Card Grade Template

The Macs-imized High School Library

by Ruth Windmiller and Elizabeth Bankhead
Cherry Creek High School
9300 E. Union Avenue
Englewood, Colorado 80111
(303) 773-8920 x2398

Computer use at Cherry Creek High School has gone through the typical evolutionary process from math-oriented computer programming classes to a wide range of applications crossing administrative and instructional lines. Presently, in addition to the two computer programming classrooms, our school facility includes three other instructional computer centers: an interdisciplinary Apple IIe lab for curriculum-based instruction, a library Apple IIe personal computer center where students may work independently, and a library Macintosh lab for faculty and student use. Cherry Creek's population of 3,400 students and 200 faculty members utilize these facilities for subject-related computer applications, designing lesson plans, writing instruction, interactive foreign language activities, business simulations, college decision-making, and numerous other personal and instructional needs.

Until 1985, Apple IIs were the only computers available and the major emphasis was on computer programming. Realizing the need to embark on the second stage of computerization by demonstrating the versatility of computers as tools for administrative as well as instructional purposes, the CCHS librarians applied for and received an Apple Macintosh Grant with a Model Secondary School Proposal.

From the beginning, the Macintosh has repeatedly proved its ability to handle large files, interface with other technologies and network administrative data, while remaining a favorite of students and teachers for its low learning curve, powerful graphics and versatile word processing capabilities. Macintosh use flourished because of the obvious natural extension of the Apple II programs, already familiar to many Creek students and staff, and also as a result of Macintosh networking and connectivity capabilities. The Macintosh is compatible with the IBM mainframe on which the school district data processing functions have traditionally been based.

Library Functions

While administrative applications have been invaluable in terms of productivity and efficiency to the school at large and to the library's program philosophy, our greatest excitement with the Macintosh computer lies in its numerous library applications. Information management, service, and instruction are available to a variety of student and faculty clients in ways never before imagined. The Cherry Creek High School Library houses approximately 35,000 books, 175 periodical subscriptions, numerous reprint services and 1900 audiovisual items. Current uses of Macintosh computers in our library are numerous and focus on these major areas:

- Maintaining administrative and procedural files
- Maintaining and creating instructional activity files and databases
- Accessing online data bases and interlibrary loan systems
- Publishing and graphics applications
- Creating and updating bibliographies
- Creating databases for receipt and circulation of periodicals, government documents, and sample textbooks
- Merging files for name tags, mailings, newsletters and other public relations activities
- Catalog card production

- •Staff information database
- •Obtaining new product and software upgrade information via AppleLink communication system
- •Maintaining equipment inventory
- •Producing in-school audiovisual software catalog

Examples of Specific Library Applications

Administrative and Procedural Files

Until 1984 our library media program was minimally involved in technology. All management functions involved paper files and constantly changing documents were maintained, updated and produced manually. Today, using primarily Microsoft *Works*, the CCHS library staff has been able to support a burgeoning program by automating all statistical records, budget information, ordering and inventory data, as well as numerous databases. Though the library program has tripled in size and service over the past five years we have not increased staff. Increased efficiency has resulted in librarians being able to spend more time instructing students and planning with teachers.

Instructional Files

Research skills instruction at Cherry Creek is an integrated and multi-faceted program which involves teaching research strategies, critical thinking skills, audiovisual production, and computer applications. CCHS librarians and teachers plan cooperatively to teach critical information skills which evolve from course content and subject matter. Last semester over 500 classes used library resources in planned resource-based activities generated on the Macintosh using primarily Microsoft *Works* and *MacDraw*. An instructional format database contains planning documents for each lesson, subdivided by grade level and curriculum area, which are constantly changing and would be impossible to customize to each assignment and present efficiently without the Macintosh. Templates include "Research Skill Formats," "Approaches to Research," and "Research Task Analysis" as well as over 100 formats unique to individual class assignments and needs. With the purchase of HyperCard stacks to interact with laser disk programs for Science and Social Studies the instructional capabilities of the Macintosh are widely expanded.

Online databases and interlibrary loan systems

In a high school such as ours with over 75% of the students college bound, it is important that bibliographic instruction include networking experiences for upper level students. Students learn to access local, public, and academic research collections and to retrieve documents by using a dedicated terminal and modem next to the card catalog which interfaces with CARL (The Colorado Alliance of Research Libraries). Journal articles are requested from participating academic libraries by interlibrary loan forms and books are sent by courier to local public libraries for student checkout.

Publishing and Graphic Applications

The graphics capabilities of Macintosh are the most popular applications with our student and teacher patrons. There are program choices for every presentation and public relations need, enough to make even the rank amateur look good! Though teaching students Mac graphics capabilities is one of the production components of the library instructional program, student use of graphics ranges from unusual font styles for lettering poetry posters, to sophisticated over-size presentations at science symposiums. *ClickArt*, *WetPaint*, and *WetWorks* are used for customized designs, displays, signs, overhead transparencies, labels, and credits and titles. Students are taught to use these programs in cooperative planning between teachers and librarians for class presentations and soon branch out into individual projects.

Bibliographies

Bibliographies are used primarily by teachers and librarians in the instructional program as lessons are planned and new materials are written into existing plans. Students are always encouraged, however, to develop their own search strategies. Both the word processing and database components of Microsoft Works offer excellent options for generating bibliographies that serve numerous functions. The same lists can be personalized for different classes and teachers with ease. Historical fiction, for example, is categorized by historical periods which correspond to textbook chronologies with the database, and notes on each book are imported from word processing files for the final document. Presently over 60 separate bibliographies are updated by a clerk as materials are received and new ones are generated by librarians as needed for lessons.

Online Communication

Telecommunication technologies are used not only for student and faculty access of remote databases in the CCHS library, but also by librarians to obtain new product and software upgrade information via AppleLink, and to communicate and problem solve with other Macintosh users. Our state professional organization will soon support professional networking by establishing a state-wide bulletin board which we will also access on the Macintosh.

Administrative Functions

The Cherry Creek Library is involved with the Macintosh network on several external levels, serving as network manager for the school's administrative, athletics, and science offices. Specific functions of each of these offices differ somewhat, but all use common network software which simplifies software upgrades, technical support, staff in-service, and file sharing. Microsoft *Works*, *Excel*, *PageMaker*, *AppleLink*, and *MacLightning* are the current common software applications. MacNetwork hardware connects five administrative areas in two separate buildings to the library with a combination of AppleTalk and PhoneNet, four Apple modems, and two MacMainframe terminal emulators. The network links thirteen Macintosh Plus computers, three laser printers, and two 60 MB CMS HD drives.

Registrar

Senior credit verification files and diploma information
Course registration materials and handbook
Student handbook revisions and production
Student and Staff Correspondence
Faculty and Staff database and mailing list
Master schedule for 375 courses, 1400 sections
Course enrollment, scheduling, and comparisons

Activities

Student identification records
Senior records for graduation reports
Mailing labels for clubs, athletic teams, classes, and parent groups
Master scheduling of facilities for activities and security in five buildings
Daily intra-school communication system
School, student and parent publications

Athletics
Eligibility reports
Uniform and equipment checkout system
Sports equipment inventory

Guidance and Counseling
College entrance exam scores
College acceptance records and comparative data
Letters of recommendation

Bookkeeping
Departmental spreadsheet
Activities receipts and disbursements
Budget correspondence and forms

Conclusions

The "Macs-imized" program of the Cherry Creek High School Library has made an impact on students, faculty, and administration. Macintosh computers, whether alone or networked, encourage cooperation across administrative lines in the school community, minimize computer training time because of ease of use, and impact the educational program by increasing productivity of librarians, teachers, and administrators, as well as making technology accessible to all students. The power and versatility of the Macintosh, with its flexible and adaptable base of supporting software, is just beginning to be tapped both in our library and throughout the school.

Library Software

AppleLink
ClickArt
HyperCard
MacCards
MacPaint
MacWrite
The Perfect College
ThunderScan
WetWorks
Certificate Maker
Excel
Lookup
MacDraw
MacVision
Microsoft Works
SuperPaint
WetPaint

Special Libraries

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The Corporate Library Macintosh by Kerry G. Stanley and Diane C. Shaffer.....61

Macintosh Applications of the Merriam Center Library by Edward J. Valauskas..66

Macintosh in the Apple Library

by Rosanne Macek
Supervisor, Information Services
Apple Library
Cupertino, California 95014
(408) 973-3116

Introduction

The Apple Library was established in August 1981 to serve the information needs of the employees of Apple Computer Inc. The library staff currently does research in the areas of engineering, marketing, sales, competitive intelligence, business, and answers questions on a broad range of topics for just about every department at Apple.

The library's collection consists of about 6,000 books, 650 periodical subscriptions, industry standards, software, videotapes, audiotapes, manuals, and conference proceedings. Services include literature searches, document retrieval from external sources, table of contents distribution, ready reference, and information consulting.

The staff consists of nine professionals and five clerical assistants. All areas of library operations have been automated using the Macintosh. This article will cover the hardware and software that is used to automate the following areas: document preparation, public relations, online searching, budgets and statistics, file management, and will briefly mention an integrated library system which we are currently testing.

Hardware

Each staff member has a Macintosh SE or a Macintosh II on his or her desk. Each of these systems also includes an internal 20 or 40 megabyte hard disk so that staff members can easily store all the software they use on a daily basis as well as their text files.

All of these Macintoshes are connected via the AppleTalk local area network. Included in this network are also three LaserWriter laser printers, a file server, and *LaserShare* print spooling software. This hardware setup enables all staff to access a laser printer and information stored on the file server. The print spooler allows information that needs to be printed to be sent to the file server and then the printer, freeing up the staff's individual Macs for other tasks while files are being printed.

Document Preparation

As with any library, the Apple Library produces a variety of written materials: memos, letters, reports, bibliographies, promotional handouts, etc. For simple memos and letters, some of the staff prefers *MacWrite* for its ease of use and simplicity. The latest version is 5.0 and includes some advanced features such as spell checking and has more command key equivalents than in the previous version.

Most staff members prefer Microsoft *Word 3.02* for its advanced features. It gives the user the ability to split the screen, produce footnotes, create outlines or table of contents, and can effectively handle very large files.

Besides memos and letters, the Apple library also produces two newsletters. *Get Info.* is a monthly publication sent to all Apple employees and lists new books, upcoming conferences, new services, plus a variety of other information. The *Apple Library User Group Newsletter* is a quarterly publication sent to approximately 12,000 librarians worldwide so that user group members can share information about how they use Apple technology in their libraries.

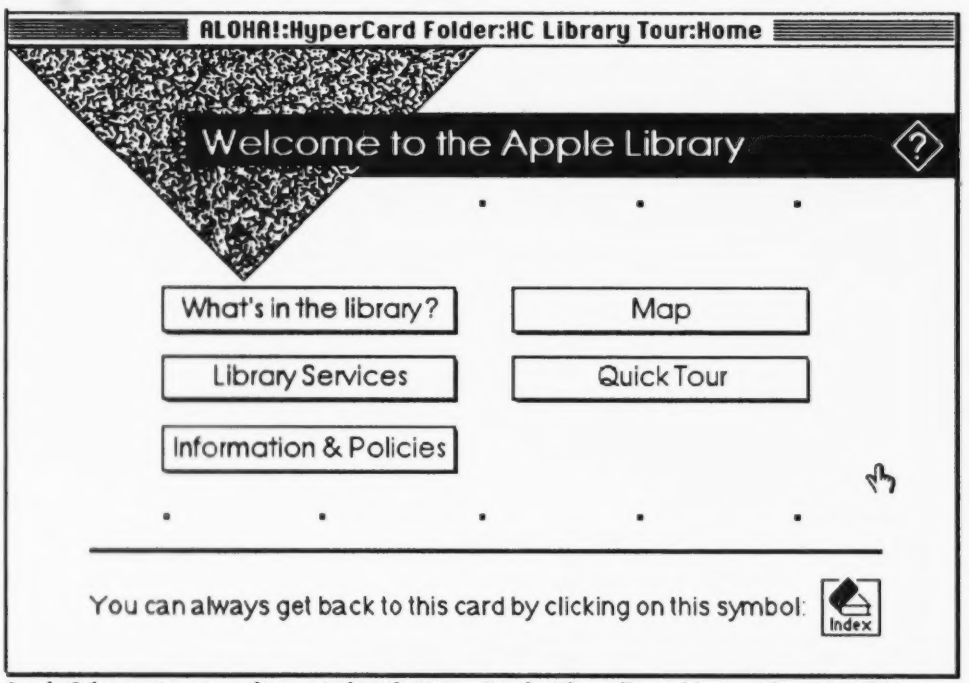
Both of these publications are produced using *PageMaker* software. In contrast to word processing software such as *MacWrite* or *Word*, this desktop publishing package enables the user to easily lay out a newsletter in columns and can easily integrate graphics and text for a professional-looking newsletter.

Public Relations

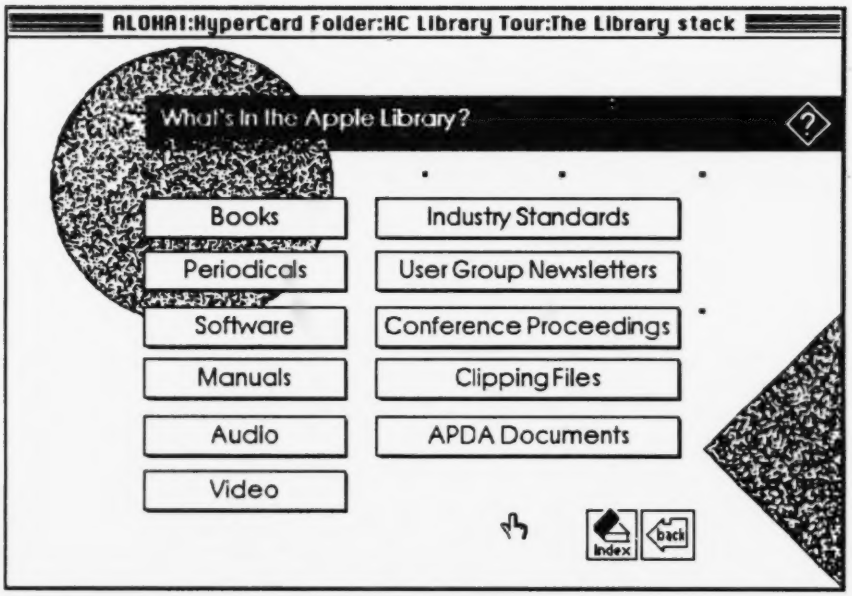
Public relations is important for any library. There is the need to constantly remind library clients about the services the library offers and educate them about how to use the library. One way for corporate libraries to help their company's employees become more aware of library services is to attend other departmental staff meetings and present what the library has to offer. The Apple Library's "Library Roadshow" recently went on tour and visited many other departments, did presentations about the services offered by the library, and answered questions about how the library could better work with other departments on their information needs.

Good visuals are essential for any presentation, and the Macintosh makes the creation of overhead transparencies quite easy with a Microsoft software package called *PowerPoint*. *PowerPoint* allows the user to create a series of professional overheads that can easily combine graphics and text. The screens that are created can be printed out to make transparencies or can be viewed on the Macintosh screen.

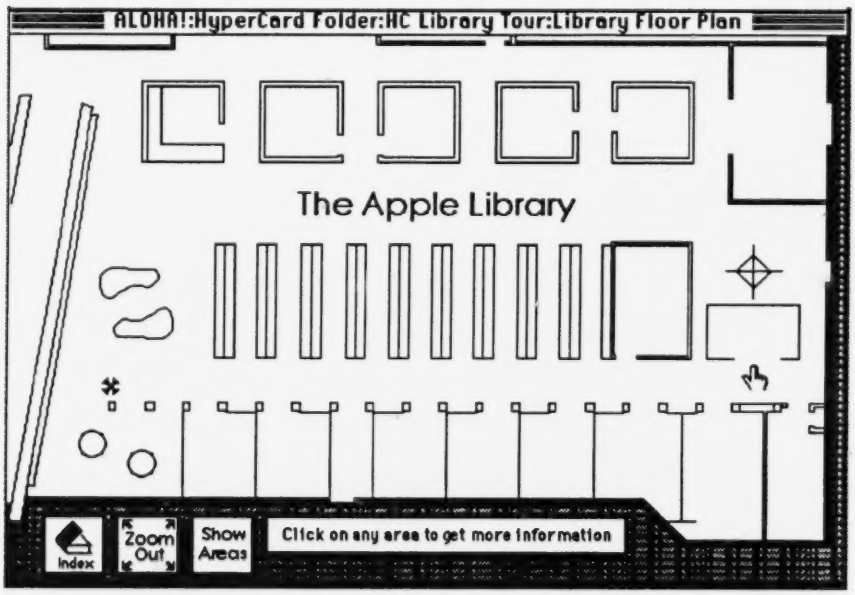
Another way the Apple library educates its clients is when the clients actually visit the library. There is a public-access Macintosh in the front of the library that includes a tour of the library and description of all library services. This program was created using *HyperCard*. It explains to the new client what services the library offers, how to locate information in the library, and introduces the library staff.



Apple Library tour stack created with HyperCard. This allows library clients to learn about library services and locate information in the library. Clicking on any of the boxes will retrieve additional information about that item.



After clicking on the box "What's in the library?" on the previous screen, the user will be presented with this information. Clicking on any of these boxes will retrieve additional information about that item.



Part of the Apple Library tour stack, this is the library's floor plan. Clicking on any part of this map will retrieve additional information about what is housed in that area.

Online Searching

Because of the need to obtain information very quickly and the need to manipulate that information in ways impossible with printed indexes, the staff are heavy users of online databases. DIALOG is used most often as well as NEXIS, Data Times, VU/Text, and others. The software used to access these online systems is *Smartcom*.

Smartcom was chosen because of its ease of use and its ability to easily download large amounts of information. Downloading is as simple as clicking on a picture of a disk to begin downloading and clicking again to stop downloading.

Smartcom is used for accessing DIALOG, electronic mail, and for sending orders to vendors.

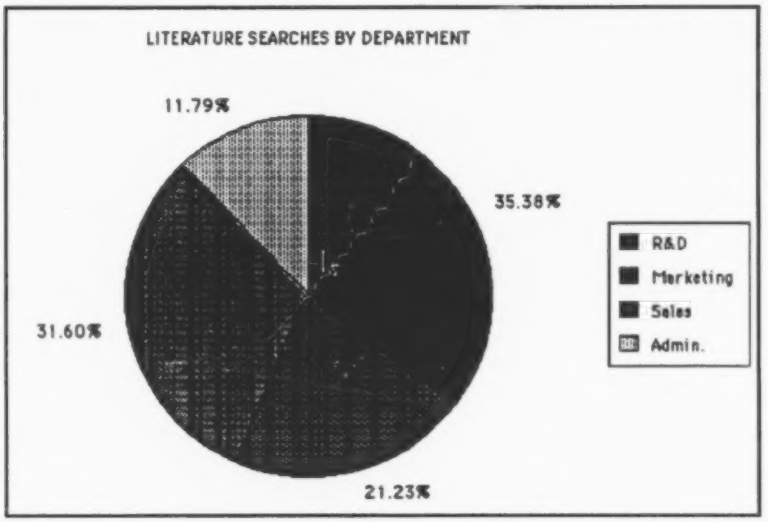
Quite often library clients need information within hours and the ability to download this information, format it into an attractive layout, and present it to those clients quickly has been very useful.

Once information from an external database has been downloaded, Microsoft *Word* is used to reformat it. *MacWrite* is not acceptable for this task because it doesn't handle large files well. With *Word*, a cover sheet can be easily added to the search, the search can be reformatted with different fonts if desired, and a header or footer can be added which will appear on every page.

Budgets and Statistics

Microsoft *Excel* is a very powerful spreadsheet program that also includes charting capabilities. It is extremely helpful when preparing the library's budget. It automatically calculates monthly, quarterly, and yearly totals and also allows the user to play "what-if" games. For example, if the book budget were decreased or increased by 10%, the effect on the overall budget can be determined immediately.

It is also helpful to track library statistics. Once the information has been entered in a spreadsheet, charts can be easily created that represent that information graphically.



Sample chart that can be created using *Excel*

Flile Management

The library has several databases to help track information in serials, document retrieval, accounting, and acquisitions.

The serials database is set up with *FileMaker Plus*. This database allows the person in charge of serials to check in periodicals on a daily basis, track which issues need to be claimed, and print routing slips.

Since many of our clients' article requests are needed within a day or two, most of our interlibrary loan requests go through an information broker rather than to other libraries. Because of this, this function has been renamed document retrieval rather than interlibrary loan. Information in this area is tracked using *OverVUE*. Information about each document request is entered into the database, uploaded and sent to our vendor via the CLASS OnTyme electronic mail network, and checked in on the database when the item arrives.

FileMaker Plus is also used to maintain accounting records. For many vendors, we need to submit a form, called a check request, to the accounting department along with the invoice so that the vendor can be paid. *FileMaker Plus* allows information for each check request to be entered and then an actual check request form can be printed out and sent to accounting.

Omnis 3 is used to maintain our book acquisitions information. Information from this database is also uploaded via electronic mail to our vendors when placing orders. This database also produces detailed reports on how much is being spent for each department on a monthly basis.

Integrated Library Systems

While all the small files we have created are very helpful, their main disadvantage is that information cannot be shared between files easily. An integrated library system would allow information to be shared. For example, when a book is ordered, information about that book could be entered into an acquisitions system and then that data could be automatically transferred to the catalog and circulation system when the book arrived. Currently we are testing a system called the *Macintosh Library System*, or *MLS*. We are currently using the catalog module and will soon begin testing the acquisitions and circulation modules.

Conclusion

The Apple Library uses the Macintosh to automate every area of library operations. We have found it to be an extremely useful tool in making our operations run smoothly. It allows us to produce a high volume and high quality information product for our clients.

The Corporate Library Macintosh

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The McNeil Pharmaceutical Library is a research and development library existing to support the origination and development of novel pharmaceutical agents. Supporting research in a rapidly changing environment requires library services which are as dynamic as the business. The changing business climate and regulatory environment of new drug development has placed additional demands of the information services the library provides. Fortunately changing technologies in library services has allowed the library to grow and provide the requisite information needed to make complex scientific and business decisions. In this paper we discuss our progress in integrating the Macintosh microcomputer into our operations. In some cases we have improved our productivity, but more importantly we have seen how we can enhance the value of our services through computerization. We have started to see results from the introduction of the Macintosh computer, and we have many plans still to implement.

Introducing the Macintosh —Online Searching

Our first Macintosh purchased in early 1986 was a 512K "Fat Mac" with an external 400K floppy drive and an ImageWriter II. This soon was upgraded to a Mac Plus, a minimum configuration today. This Mac was initially dedicated as a graphics capable online search terminal. We purchased *VersaTerm-PRO* terminal emulation software because of its capability to emulate the Tektronix 4014 series of graphics terminals. This software in its current version emulates both the Tektronix 4014 and 4105 series of terminals as well as VT100 and Data General 200 text terminals.This terminal emulation capability allows us to conduct chemical substructure searches of the Chemical Abstracts databases on STN with most of the features of a dedicated "type 1 graphics" terminal. One advantage of a microcomputer search terminal is its ease in reformatting search results. Downloaded structures and textual information are saved in memory or to disk for reformatting. Presently, using a Macintosh SE with 2.5 MB of memory, 32 graphics images can be saved in memory. The advantage to the researcher of computer reformatted search results is in the enhanced presentation of desired information. Superfluous data can be edited to facilitate the identification and comprehension of relevant information. A file can be saved to disk as a Microsoft *Word*, *MacWrite* or ASCII formatted document for further embellishment.

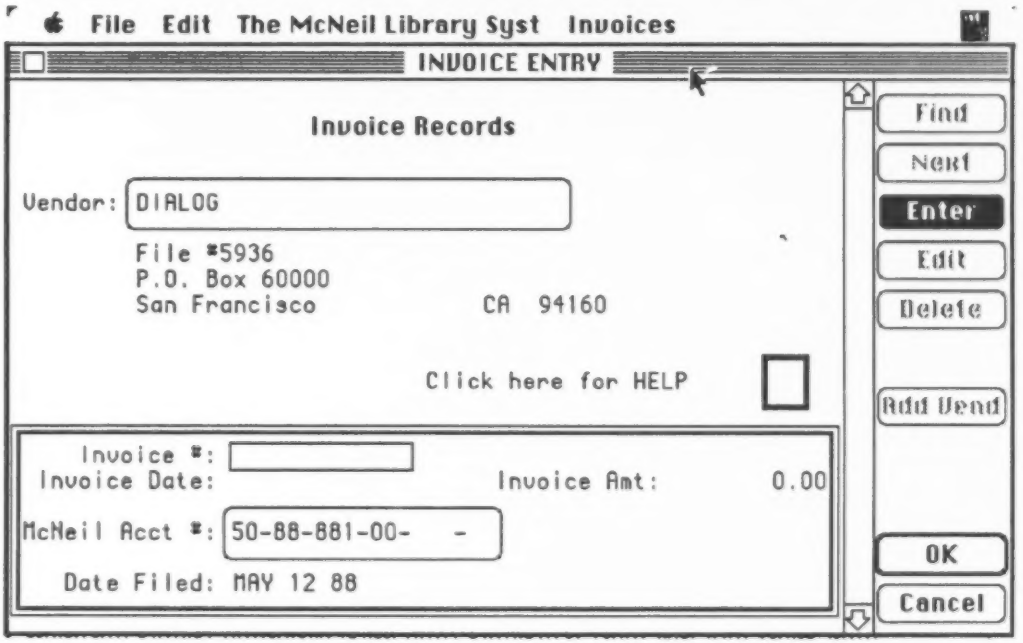
VersaTerm-PRO has a very convenient automatic macro recording feature. With the recorder turned on, a single logon to your desired vendor will create a macro command. Thereafter, a one command menu selection will handle all the various steps of logon.

We are presently introducing *Pro-Cite* database management software to the searchers toolkit. *ProCite*, or its predecessor *Professional Bibliographic System*, allows you to create a database of downloaded citations. All fields are variable length and full abstracts can be included. We download search results from Dialog in the tagged field format; required by *ProCite* for record conversion. Once converted into a *ProCite* database, bibliographies in any preformatted style or your own custom format can be created. For example a bibliographic format required for a specific journal publication can be created. A new feature in *ProCite* is the capability of removing duplicate citations, a constant problem when downloading results from many databases. Indexes, with controlled vocabularies, can be created for any field to facilitate retrieval. Full Boolean logic and saved search sets are supported.

Administrative Tasks

Starting with the one search terminal Macintosh, its flexibility was exploited to handle routine administrative tasks. Library statistics, monthly reports and budget recommendations are necessary evils in library management. The use of Microsoft *Word* and *Excel* has added some interest to the tasks and definitely provided efficiency gains. A relatively simple spreadsheet model was created to track services provided and show trends over time. Approximately 30 service categories are tracked, each occupying one row of the spreadsheet. Statistics, presently taken from staff members monthly reports, are entered into monthly columns. A "Year-to-Date" column automatically sums the monthly data. At year end the "Total" values are transferred to a yearly data column and yearly percent changes automatically calculated. Graphs of these trends could be created from this data using the charting capability of *Excel*, although we have not as yet pursued it. The current month's statistics are also pasted into a column which has been copied into *Word*. A QuickSwitch feature allows you to quickly update your monthly report written in Word with data extracted from this current month's column. No entry is required in the monthly report. A library budget spreadsheet was also created primarily to allow If-Then calculations and provide graphs of yearly changes.

Although the library is supported by the accounts payable department with general ledger reports and budget versus actual analyses, we felt the need to track invoices as we processed them. Quite often second notices would be received before they appeared on the general ledger. We had no convenient way to ascertain if we had processed that invoice for payment, sometimes leading to duplicate payments. Using *Omnis 3* Plus database management software an invoice tracking system was developed.



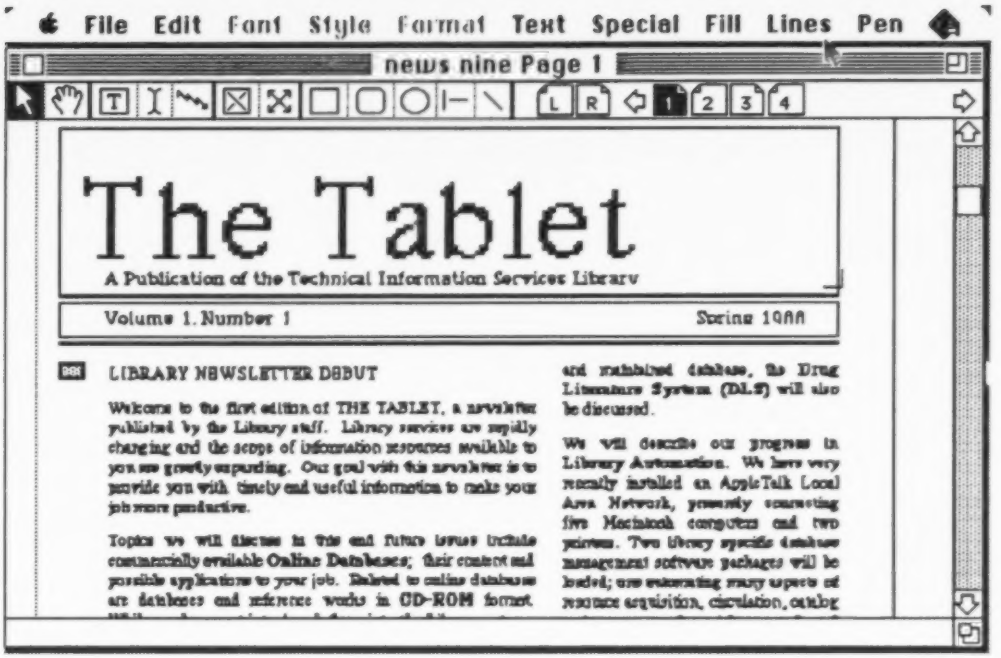
The system will not allow multiple entries of the same invoice number. Various reports sorted by vendor or by budget category can be run to track yearly spending progress. *Omnis 3 Plus* is a very powerful relational database management tool and understanding all its features requires time. Simpler applications may be created with *Omnis Express*, a front end used to quickly generate applications.

Desktop Publishing

Ready,Set,Go!(RSG) is a user friendly and versatile software package that has many potential applications in a library setting. It is a good choice for any task which requires precisely formatted pages of text mixed with lines or graphics, such as forms, brochures and newsletters. The first two applications of this software in our library were to produce a library newsletter and several library forms. For many years there had been both a need and a desire to produce a library newsletter to increase user awareness of new services and resources available to them. The library newsletter was an ideal project that let all staff members try out the Macintosh.

Much anguish can go into the basic design of a newsletter. We consulted several desktop publishing guides and sample newsletters to give us an idea of the possibilities and to help us avoid common design errors. Both *The Grid Book: A Guide to Page Planning* by Jan White and *The Aldus Guide to Basic Design* by Roger C. Parker were helpful. We made samples of the various ideas using *RSG*. The first consideration was how to break up the page: a single column format verses multiple columns. Through a democratic process the two column format was chosen. Two columns is a middle of the road design choice because it is uncomplicated but offers some flexibility. On the other hand, it is a common format and requires some dress-up to make it interesting. In considering two column variations, thoughts were given to column sizes, line spacing, font type, and "frills." The consensus was that a wide left column with a narrower right column would offer a nice variation, but concerns were voiced that the text might not flow well throughout the newsletter. A compromise was suggested of using this uneven width for a feature article on the cover page and equal width columns within the publication. In addition to the feature article, the cover page needed to include the masthead and a table of contents box. We took advantage of the wider left column to incorporate the contents box within that column. A masthead was designed that sets the tone for the publication and is compatible with the rest of the design. After this point, several slight modifications were made to add flair or emphasis to the basic design. To highlight the start of an article the columns were slightly offset to the right and a shaded block was placed in the margin. Horizontal lines, called rules, were used with standard column bylines. These features give the reader a point of reference when scanning the newsletter. The page reference was incorporated into a double lined rule at the bottom of the page.

Graphics are handy to fill in odd spaces on the page. We used graphics that were copied from *HyperCard* and either pasted directly into a *RSG* graphics block or pasted to *SuperPaint* for modification. *SuperPaint* pasted graphics needed to be saved as *MacPaint* or PICT for use in *RSG*. By using *RSG* and a laser printer we can also quickly and easily produce high quality, professional looking forms. For example, *RSG* allows you to specify a large block of equal length lines that are conveniently spaced for use with a standard typewriter (12 point). Simply draw a group of lines in the general area that you would like and use the specifications box to align them. Borders and rules can be added for style. We can use ThunderScan to scan our corporate logos or other graphics which can then be easily added to the form. Also, *RSG* has a full set of commands to work text into the form.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The Tablet
A Publication of the Technical Information Services Library
Volume 1, Number 1
Spring 1988
LIBRARY NEWSLETTER DEBUT

The Library Network

From a start with one Macintosh used for one task, online searching, we have explored existing software and expanded our use to address many library services. We have now added four additional Mac SEs, another ImageWriter printer, several modems, and a 20 and a 45 MB hard drives. To maximize efficiency gains, we desired to connect all hardware and share files. Why rekey monthly report statistics from staff reports if they can key their data directly into the library services spreadsheet? Why not allow all staff members access to the invoice file and they can each input those invoices from their area before submitting for payment approval? The answer lies in a local area network and fortunately the Macintosh is a very easy computer to network. The AppleTalk networking protocol is built into the system of all Macintoshes. Simple peripheral sharing, a printer for example, can be accomplished by low cost twisted pair cabling, and file sharing can be implemented using network software. At McNeil, we have chosen the Farallon PhoneNET cabling system and TOPS distributed file server software. The PhoneNET cabling uses regular four conductor 22 gauge phone wire, although in our case the wire is Teflon coated to meet fire code regulations. We ran the new wiring in the ceiling to fifteen sites in the library. Each piece of hardware can be simply attached using phone jack connecting wire and Farallon connectors. Each Macintosh on the network has TOPS software installed in the system folder. Any user can "publish" files they wish to make available to others. This availability may be limited by password and/or by read/write privileges. Thereafter staff members can "mount" any files to which they have been given access.

This network's advantages are ease of use and installation, minimal maintenance and low cost. Once the cabling was finished, the computers were simply "plugged in" providing everyone with access to shared peripherals. After installing TOPS software any "published" files could be accessed. Network administration time has been reasonable at a maximum of several hours per week including backup time. The cost should be less than $200 per node barring expensive cabling installation charges. The disadvantages probably center around the relative slowness of AppleTalk however, in our library environment with less than ten concurrent users we foresee no problems. At our

site, hardware/software options do exist which allow the use of AppleTalk across Ethernet and connectivity with VAX minicomputers to provide enhanced levels of capability and sophistication.

What's Next?

This year we plan to expand our network with the purchase of three Mac IIs including a large monitor for desktop publishing, and a laser printer. We are presently testing our new Shiva NetModem 2400. Our primary literature searchers will have dedicated modems while the NetModem will serve primarily library functions (OCLC, E-mail, online claims, etc.). However, to integrate all of these functions, we wish to implement a totally integrated library automation package addressing the acquisition, card catalog, serials control, routing and circulation functions. Hopefully, with some polish, CASPR's *Macintosh Library System* will allow us to meet this objective. We hope to report on this system in the future.

The hardware and software are available. With some imagination many aspects of database management, online searching and library services can be enhanced. The resulting positive reception by our users will lead to the increased recognition of the value of information and our role in providing that information to facilitate decision making.❦

Macintosh Applications of the Merriam Center Library

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The Library of the Charles E. Merriam Center for Public Administration (also known as the Merriam Center Library or MCL) is a special, non-profit library, devoted specifically to literature on local, regional and state governments. It was established in 1932 to provide information to a group of professional organizations residing in Chicago's Hyde Park community. These associations serve a membership that includes thousands of officials from various levels of government around the country. Some 40 organizations have resided in the Merriam Center over its half century of existence, taking advantage of the Center's Library and the rich resources of the adjacent University of Chicago campus.

Over the course of its 56-year history, the Merriam Center Library has developed a well-earned reputation as an innovator in providing information on government and politics. Lucile L. Keck, the founding librarian, was a leader in developing new ways of handling local and regional documents. Working with luminaries in public administration, political science, and librarianship, she was instrumental in creating the monumental monograph entitled *A Library Classification for Public Administration Materials*. Published in 1942 jointly by the American Library Association and the Public Administration Service, this monograph is the basis for the Glidden-Marcus classification scheme, still in use today by special libraries serving local governments in this country.

Over the past 24 months, MCL has been using a group of Apple Macintosh computers to handle all of the daily chores in processing materials and preparing publications. Currently, the Library has four Macintosh SEs, a Macintosh Plus, an Apple LaserWriter Plus, an ImageWriter II with an AppleTalk board, three modems, and a combined capacity of 100 MB of hard disk storage distributed around the local area network. Each computer is linked with LocalTalk, and each unit is responsible for several tasks within the entire library process. Several units —Macintosh SEs — prepare and format bibliographic data for the production of the monthly *Recent Publications on Governmental Problems (RPGP)* and the bimonthly Council of Planning Librarians' *Bibliography Series*. One Macintosh SE in the publications area is equipped with an Apple PC 5.25" Drive and a Mac SE PC Drive Card, to translate bibliographies prepared as MS-DOS documents for publication. Another workstation — another Macintosh SE —handles all records for acquisition and for irregular serials (numbering over 2,000 titles in the collection). Yet another Macintosh SE handles all circulation records as well as all information on the 900 periodical titles that the Library routes to some 120 researchers in the Merriam Center. Finally, a Macintosh Plus operates as the Library's main telecommunications node, used for cataloging by accessing the 17 million records on the Online Computer Library Center (OCLC) mainframes, as well as examining online databases available through DIALOG for patrons. Two of the other Macintosh workstations also are equipped with modems to access archival bibliographic data stored remotely on a University of Chicago (UC) mainframe as well as local electronic bulletin boards.

Since 1981, the Library has used several programs mounted on UC mainframes to store and sort bibliographic data. These programs were designed to produce output for the production of *RPGP* and to generate a book catalog. One purpose of the Library's involvement with the Macintosh was to reduce and eventually eliminate MCL's dependency on the UC mainframes. The Library has experienced a decreasing need for mainframe time through the UC Computation Center, lowering MCL's expenditures for mainframe computer time by 60% over the last two years (see Table 1). These savings

support staff development, allowing personnel to pursue degrees in undergraduate and graduate programs in the area.

Year	Mainframe Costs ($)	Percent Increase/Decrease (%) [compared to previous year]
1984	11286	-
1985	10999	-3
1986	14460	+24
1987	8013	-55
1988 (proj.)	5638	-30

Table 1: Savings in Mainframe Expenditures in the Merriam Center Library, since implementation of Macintosh Local Area Network

Given the size of MCL's collection —50,000 monographs, 100,000 pamphlets, 3,000 serials — the use of the Macintosh to operate completely the entire Library is especially noteworthy. The staff has been very active in publicizing their work and articles by them have appeared in a number of journals. This work is an extension of the MCL's staff commitment to the Macintosh line both at work and at home. The entire evolution of the Macintosh can be recreated from equipment owned by MCL or its staff; Library personnel own collectively in their homes several Lisas operating as Macintosh XLs with MacWorks, a Macintosh 128K, several Macintosh 512Ks, a Macintosh 512K Enhanced, and a Macintosh II. Several staff members have spoken at local and national meetings as well as at local workshops; routinely, they answer calls for advice and assistance from colleagues experimenting with Macintoshes. On one occasion, the entire staff converted a massive data file for another special library; this file was originally stored on an obsolete minicomputer and was converted to a database designed by MCL on a Macintosh SE.

In spite of all these external distractions, MCL is hard at work devising new ways to use the Macintosh to ease information retrieval in the Library. Several experiments are continuing with *HyperCard*. Michael Wilson has created a *HyperCard* tour of the Merriam Center with special emphasis on the Library's scattered offices. Dennis Jenks has put together *HyperCard* applications to manipulate archival files on the UC mainframes. One product of his work has been an extensive sort of all of the subject headings on the archival tapes, for the eventual production of a formal thesaurus. By the end of the year an electronic bulletin board will be in place, allowing 24-hour access to the Library and its data. Overall, the Merriam Center Library has some exciting plans for the future, taking full advantage of the latest developments in the Macintosh lineage, continuing the Library's rich tradition of entrepreneurial innovation.❦

Postscript: Examining the Future of Personal Computers and Libraries

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What will the future hold for such computers as the Macintosh in libraries? Predicting the technological future is always a dangerous and embarrassing habit. At its most innocent level, one risks becoming a laughing stock. At its most serious stage, people in influential positions actually take your statements as approximations of reality and try to make them work. There are a number of remarkable precedents in computer forecasting. It has been noted that IBM's Thomas J. Watson once believed that computers had no commercial possibilities(1). An early IBM internal study examining the market for computers in 1951 estimated there would be a need for no more 25 machines in this country(2). These dismal views cannot be blamed entirely on their sources; these amateur futurists were imagining a place in society for devices that used 19,000 vacuum tubes, filled 15,000 square feet, and weighed 30 tons!(3) Certainly not a device for the desktop!

Librarians have had an interesting relationship with computers and their programmers for the past thirty years. This relationship between libraries and computers has never been completely idyllic. In the 1956 Hollywood comedy *Desk Set*, Katherine Hepburn and Spencer Tracy acted out a true dream version of this relationship. Hepburn was a librarian, running a special library in a television network. Tracy acted as a computer engineer, all set to distill all of the library's information into a series of punched cards. Tracy and Hepburn traded witty remarks, fell in love, and the librarians took over the computer.(4) We can probably say with a great deal of certainty that the early forays of librarians into the domain of the computer were not similar to the the *Desk Set* script. Here's a quote from a librarian writing in 1961 on the status of libraries and computers:

> The information retrieval problem would be easy if it weren't for the damn books. The computer engineer can make an important contribution to the architecture of tomorrow's librarianship, but we cannot leave to him the solution of the problem of information retrieval, for he will not know what to do with the damn books. Always there are the damn books — everything must begin with them — they are the hard core of the library problem. In automation, as in architecture, form must follow function, and in its bibliographic applications it still has a considerable distance to go before it catches up. The closing of this "gap" is the task of the new librarians.(5)

We are the "new" librarians, using revolutionary advances in computer technology to close this gap between information and patrons. What will technology offer us in the next decade? In a little over a decade, personal computers have progressed from machines with little more than 1000 bytes of memory, mere kits of plastic and metal, to devices with up to 8 megabytes of RAM, hundreds of megabytes of hard disk storage, processing data at speeds greater than one million instructions per second.(6) The basic prices have remained fairly stable for this desktop computing technology, rewarding patience with greater performance for roughly equivalent amounts of money. The IBM PC in 1981 provided for $4,480 an Intel 8088 microprocessor, 128K of RAM, two 160K floppy drives, a monochrome board and monitor, a serial port, a parallel port, and MS-DOS. For approximately

the same amount of money, in 1988, one can buy a Macintosh SE, with a microprocessor twice as fast, much more RAM, a floppy drive with greater capacity, a 20 MB hard disk, a monochrome graphics built-in monitor, two serial ports, a SCSI port, a mouse port, a sound port, and a number of features unthinkable in 1981.(7) The technology has advanced to the point where these so-called "microcomputers" challenge and even surpass the processing speeds of their distant cousins, the mainframes. For example, the IBM Personal System/2 Model 80 personal computer has been claimed to process data at nearly three million instructions per second (MIPS), equal to the processing speed of the IBM mainframe Model 168.(8) The Model 168 costs $3.4 million, the Model 80 approaches $11,000.(9) These hardware advances within the past decade will be duplicated to some extent in the next, meaning that we can expect continued jumps in speed and capacity, coupled with an unfortunately slower pace of advances in software.

Hardware and Software of the Future

With the 21st century looming a little over a decade away, the literature of the computer industry is ripe with predictions on the shape of the desktop computer. It seems best at this point to summarize some of these printed oracles to see what the future may hold for libraries.

Microprocessors

Current microprocessors from Motorola and Intel perform at speeds between 1 and 3 million instructions per second. Again, a quick look at the history of these devices give us some idea of what to expect. Motorola's 68000 microprocessor, introduced in 1979 and used in the original 128K Macintosh, processes between 0.7 and 1.5 MIPS. Motorola's most recently introduced improvement on this design, the 68030, processes 5 to 8 MIPS. No details are yet available on the 68040 which should be available some time in some form this year.(10) Intel's 80386 microprocessor, the basis of the IBM Personal System/2 Model 80 and the Compaq Deskpro 386, can reach speeds of 4 MIPS. It is not surprising that some predict microprocessors in personal computers of the year 2000 to process instructions at 30 MIPS—half the speed of today's Cray supercomputer.(11)

Even this estimate may be conservative. If designers abandon the serial approach to microprocessors — with one microprocessor handling one problem one step at a time — and start to use parallel processing architectures, these predictions may seem laughable to some future computer historian. A Macintosh II can currently be customized to accommodate both its native Motorola 68020 microprocessor and exotic microprocessors such as the Transputer, giving the Macintosh speeds of up to 10 MIPS.(12) A New York firm called Human Devices, Inc. has recently developed a board called the Parallon 1, which contains 8 processors. The firm claims that by packing 16 of these boards into IBM PC, it will generate speeds up to 100 MIPS.(13) Norman Christ and Anthony Terrano constructed in the Physics Department of Columbia University a parallel processing microcomputer that achieves speeds of 256 MIPS, roughly one-fourth the speed of a Cray XMP-4 supercomputer, at a cost of under $150,000, far less than the price tag of an average mainframe or super.(14) Clearly, the basic, raw processing power of the computer will increase by many orders of magnitude, especially with the advent of parallel processing architectures in desktop computers.

Storage

With the growth in the size of applications, there has been a growing demand for more and more storage space in the form of hard disks. Current standards point to at least the need for 20 or 40 MB of hard disk space with access times in the neighborhood less than 30 or 40 milliseconds (ms).(15) Eighty percent of the personal computer systems shipped in 1987 were purchased with some sort of hard disk.(16) Gone are the days when a user could

tolerate an IBM XT with a 10 MB hard disk and access times of 85 ms, or an Apple Lisa with a 5 or 10MB ProFile hard disk. A survey of a buyer's guide to Macintosh hard disks revealed the availability of hard disks ranging in size from 20 to 490 MB, with access times as low as 16.5 ms.(17)

Despite this heavy investment in hard disks, optical storage will dominate the scene within the next five to ten years. Current optical disks can store 600 megabytes of data on a single disk, but have the disadvantage of being a read-only device with slow access times.(18) Nevertheless, there is a great of optimism and money invested that these problems will evaporate in the next ten years. Read and write optical disk drives will be available in ten years, with the ability to store 200 or 300MB of data on a 3 and a half inch disk, costing less than $400, easily matching access times of hard disks.(19) These devices will be possible with the availability of easily altered magnetic substrates on the optical disk, combined with cheap and powerful lasers, permitting faster spin times.

Hard disks and floppy disks drives will continue to survive and even thrive into the near future. The 3 .5 inch disk drive will largely replace the 5 .25 inch drive; by 1991, some 14 million 3 .5 inch drives will be sold, twice the expected number of 5.25 inch units to be supplied.(20) Two million 3 .5 inch drives were supplied in 1987.(21) Sometime after 1992, the market for these drives will peak with the introduction of optical read/write storage devices. At that point three and a half inch diskettes may become the plastic equivalents of punched cards.

Displays

Cathode ray tube displays have improved remarkably over the past ten years, with the growing demand for higher resolution and color. Current monitors feature displays over 1,000 pixels wide and high, with increased sharpness due to pixel densities up to 90 dpi,(22) displaying hundreds of colors from palettes featuring millions of colors. These displays will probably continue to dominate the marketplace in the next ten years, with growing advances in sharpness and color. Liquid crystal display (LCD) technology offers a possible alternative to the cathode ray tube, with the potential of resolutions three or more times greater than the CRT. Color will be a large obstacle for LCD devices, as well as manufacturing, power, and quality control.(23) Because of the large interest in portable computers, there is a great deal of anticipation that portable, slim personal computers with liquid crystal displays will be widely available in the next few years at competitive prices to their CRT-based relatives.

Printers

Laser printers will completely replace all forms of impact printers —daisy wheel and dot matrix — over the next ten years. The laser printer has revolutionized the way in which we look at computer output, putting print shops in every office. Higher resolution laser printers will be commonplace by the year 2000. Currently, 300 dots per inch (dpi) is a reasonable standard for these devices; resolutions of 1000 dpi will be inexpensively available over the next few years. The key element holding resolution at 300 dpi now is the cost of making printers with added memory and faster microprocessors. A printer needs at least 25 MB of memory to print at 1000 dpi.(24) The printer engines available to us now can handle higher resolutions; it is really just a matter of developing less costly print controllers, coupled with more memory and improved optics to compose an image on paper accurately.(25) With increases in the accuracy of laser printers, and the growth of a huge market similar in size and competitiveness to the copier market, color output will probably be available as well, using a four color process. Several manufacturers, including Xerox, have also mentioned the possibility of holographic printers.(26) Holographic printers would produce three-dimensional output, allowing architects the ability to create realistic models of buildings, engineers precise images of structural designs, and doctors accurate illustrations of human organs. It is quite possible that there will be printers in 2001 that we cannot even imagine today, based on undreamed-of technological break-

throughs. Who would have imagined the existence of a device called a laser printer ten or fifteen years ago?

Telecommunications

Personal computers, with their increased processing power, complicated software, and detailed graphics, will put a huge demand on communications links. The current speed limit of dial-up modems of 9.6 K bits/sec will be grossly inadequate for the transfer of files requiring rates of hundreds of megabits per second. Two techniques in use now —data compression and continual line analysis — increase communication rates to 18 K bits/sec up to 38.4 K bits/sec.(27) These sorts of technical tricks will proliferate in the near future, as the move to digital switching and fiber transmission continues. Given that more than 80% of the switches in place are still analog, dial-up modems will remain useful for the next few years.(28) By 1995, ISDN — Integrated Services Digital Network — will have replaced all analog phone lines in this country.(29) ISDN will offer several channels for 64 and 16 kilobit transmission, providing the medium for graphics, voice, text, music and perhaps other unthought of images. ISDN won't change the way your computer looks — there will still be a box that looks like a modem or a card inside the computer that will act as a physical interface. ISDN interface cards have surfaced at trade shows or have been rumored to exist, by manufacturers such as Hayes, AT&T, and Northern Telecom.(30) So ISDN and its connection to the personal computer seem very close to reality.

In a more futuristic view, it may be some time before we see the Integrated Voice Data Terminal (IVDT), a computer with built-in telephone and electronic mail functions, a telecomputer. IVDT requires some real advances in voice recognition technology to work; those advances may not occur for twenty years or so. The problem is not confined just to copying voice transmissions but in understanding speech.(31) Overall, the future looks quite bright for telecommunications, an area of no small concern for libraries.

Software

With all of this hardware power on a desktop, new software will be needed to run efficiently larger and larger programs and increasingly complex computing devices and their host of peripherals. Given the growing investment in manpower to the desktop computing environment —accessed by more and more people with varying levels of computer experience —there will be a growing trend toward more user-friendly software. Last year, William Kimmerly introduced the term "spontaneous computing," describing software that "requires the least amount of end-user time, attention, and direct involvement."(32) This environment will be so natural that it will require little familiarity with the technicalities of computers. In Kimmerly's view of the future, computers will take their place with other electronic devices such as televisions and telephones, as simply appliances in the workplace.(33)

How will this future of "spontaneous computing" be possible? A significant amount of effort has already produced some noteworthy results-- the user-friendly interface of the Apple Macintosh, the object-oriented programming tool kit called *HyperCard*. The first step towards spontaneous computing will link different data formats together seamlessly. Data managed and stored in one applications program will be accessible and useable by others working with different applications on other types of computers.(34) Already a small software industry has grown to provide these interfaces. For instance, Softbridge Microsystems Corp. in Cambridge, Mass. has created a product called *Unity* which acts between MS-DOS and applications, allowing *Lotus1-2-3* or d*Base II* to work together.(35) The next step will involve the creation of intelligent retrieval programs, to sort through all those megabytes of data stored on a CD or in a mainframe tape. These programs may be based on a hypertext kind of format, combining graphics and text. These programs will work invisibly, and will probably be based on object-oriented programming, programs written as a series of software components.

All of these developments in software are in the wings, awaiting hardware advances in

the next five years, in other cases awaiting demands from the marketplace. The software industry is highly conservative, given that their public is often not the most demanding at times. For example, 70 percent of the corporate users of *Lotus 1-2-3* at this point have not upgraded to *1-2-3*'s second release.(36) And all of these musings are really based on extrapolations of current developments, ignoring the possibilities of radical departures in programming unthinkable now.

Impact of Computers on the Library's End-Users: Patrons and Staff

What do all of these predictions mean for libraries and for the end users of computers? Some of these guesses on the future may woefully miss the mark, given the pace and tome of weekly press releases that appear in the computer trade's journals.

Who will benefit from these futuristic computers? Libraries have had a long and interesting history in taking advantage of technology.(37) Librarians will undoubtedly use these new and more powerful computers in their operations to benefit both their staff and clients. These users will reap the benefits of these new machines with many of the attributes of mainframes or supercomputers, without all the trouble to learn arcane languages or strand codes to operate them.

What Does this Mean for Libraries?

Human engineering — designing technology for the end user — is no longer an afterthought quickly put together at the end of an automation project. It has become the frame around which computers and their programs are constructed.(38) We cannot assume that the Macintosh interface, or IBM's Presentation Manager or Microsoft's Windows, will remove our responsibility to create intelligent and workable human-to-computer interfaces in the library. We cannot rely on programmers to create interfaces -- it has been said that programmers are the worst people in the world to work on user interfaces, that they have trouble seeing how people work with data.(39) We need to use graphic interfaces as a way of opening computer literacy, as a springboard for creating new ways to use personal computers within the library, to help the staff complete their day-to-day chores and to assist patrons in finding books.

Experimenting, trying to anticipate the needs of end users, is one way of maximizing our investment in desktop computing and preparing for future demands and future technology. Training — spending a few days to ensure that a week's worth of time won't be wasted —is another way of discovering end users' needs, creating solutions, and anticipating the future.(40)

But training, for both staff and patrons, is only one part of the picture in preparing for future technology. With millions of personal computers currently in use, there must be some guidelines to follow besides designing a friendly computer interface and enrolling everyone in training programs. J. Daniel Couger of the University of Colorado in Colorado Springs surveyed 17 U.S. firms with net annual incomes of $100 to $500 million and 3,000 to 45,000 employees to identify the successes and failures in using personal computers in the corporate world. He found that successful end-user computing was accomplished with an integrated approach — by providing training, by centralizing resources for information on hardware and software, by organizing an electronic mail system to provide more information and news, by identifying specific personnel as support staff to assist staff and patrons with their computer problems.(41) To some libraries, this path may seem an extreme measure to make the staff happy and to short-circuit patron complaints, but these investments seem minor in comparison to the trouble both with people and computers that will mushroom without an organized plan to anticipate problems and to take advantage of future's technology.

Are Libraries Preparing for the Dark Side of This Technology?

Librarians have to realize in the course of this preparation for the future that not all

will find this technological transformation an ideal situation. Computers have the potential for enriching personnel by increasing their skills, but they also have the potential to de-skill them as well, by robbing them of their current expertise. One way to de-skill an employee is to take a task and break it down into a series of drone-like steps, distributing the steps among a number of computer-bound staffers. Misusing automation in this fashion leads to burnout, which affects 20 to 35 percent of this country's office workers according to an Office of Technology Assessment report.(42) Workers also see the dark side of technology in management's adherence to computer monitoring — demands for so many pieces processed in a given unit of time. This form of bean-counting destroys any concept of work being anything but piecework, pay equated simply to mechanical performance.

Opportunities for creative input from those who do the work on a day-to-day level should be incorporated into managerial thinking. Rather than using new technology to solidify traditional divisions within the workplace, computers and vehicles such as electronic mail and local area networks should allow all parties in the workplace to rethink their roles, permitting change in response to fluctuations in work loads. A more flexible workforce means that the administration can react quickly to problems, allowing the entire library to run more efficiently and responsively.

Who Will Prepare the Profession for This New Technology That Is Only a Few Years Away?

Information is considered a valuable commodity. Libraries are in a nearly ideal situation to take advantage of this enlightened attitude by using technology to reach an even broader audience in ways unimagined several decades ago. Yet to take advantage of all of these opportunities means that the profession must be ready to manipulate creatively and imaginatively new technologies as they become available. How will these new new librarians be prepared? By demanding more computer coursework of their students? Library schools have to re-examine the ways in which they teach automation, if they indeed bother to teach automation. Simply requiring all students to take a computer course and learn the rudiments of assembly programming and BASIC will not create world leaders in the application of computer technology to libraries. To be blunt, programmers can always be bought. What is needed is a new way to look at library problems, to look at how problems are solved already by others, to imagine new solutions with off-the-shelf solutions. Librarians do not need to re-invent the wheel every time they have to solve an automation question, they do not need to run after alleged experts to create new systems. Library schools have a responsibility to teach people how to use technology creatively. One simple way may be through the incorporation of microcomputers into the curriculum — just as many business schools have demanded that their students purchase microcomputers and actually use them on a day-to-day fashion as they will be asked in the real world. It might be one way of forcing students to start to think before the problems of automation become they become a reality.

Personal computers will be surprisingly powerful and easy to use in the next ten years. We have the potential now to take advantage of this technology by planning our role in an information-based society. In many ways, our decisions now will affect the role of libraries as information brokers in the future. ❦

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20. James A. Martin, "Smaller drives bound for glory," *Computerworld*, v. 21, n. 12 (March 23, 1987), 106.

21. *Ibid.*, 103.

22. Anon., "Monitors/Screens," *MacGuide* v. 1, no. 1 (Winter 1987-88), 159A-165A. The MegaScreen 19.5" monitor for the Macintosh features a display measuring 1,024 pixels wide by 1,024 pixels high (p.162A); the Nutmeg/Xerox Full Page Display has a pixel density of 90 dpi (p. 163A).

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25. "Laser printers use an electrophotographic process in which a beam of coherent light creates a charged image on a photoreceptive metal drum. Toner particles stick to the image, which the drums rolls onto a sheet of paper."- *Ibid.*

26. Onosko, 269: "A hologram is an interference pattern produced when one half of a split laser beam bounces off an object and recombines with the other half of the beam on a photographic plate. When the developed plate is illuminated, it acts as a diffraction grating, producing two images. Your eyes combine the images and the object appears three-dimensional."

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29. Eric Brown, "Communications," *PC World*, vol. 5, no. 5 (May, 1987), 270.

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34. Charles Seiter and Daniel Ben-Horin, "Software," *PC World*, vol. 5, no. 5 (May, 1987), 272.

35. Patricia B. Seybold and Judith S. Hurwitz, "End users reap technology's benefits," *Computerworld Focus*, vol. 21, no. 18A (May 6, 1987), 44.

36. Seiter and Ben-Horin, 273.

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